1963 1964

Loyola

COLLEGE
MONTREAL · CANADA

- ARTS
- SCIENCE
- ENGINEERING
- COMMERCE

A.M.D.G.

1963 | 1964

General Calendar
Loyola College

ARTS
SCIENCE
ENGINEERING
COMMERCE

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ACADEMIC CALENDAR

1963-1964

1963

Monday, July 15	Last day for returning pre-registration form.
	Last day for making application for supplemental examinations.
Tuesday, August 20	Schedule for supplemental examinations will be posted.
Monday, August 26	Supplemental examinations begin.
Monday, September 16	Registration of Second, Third and Fourth Year Arts students: 10.00 a.m. to 12 noon and 1.00 p.m. to 3.00 p.m.
Tuesday, September 17	Freshman Academic Orientation.
	Registration of Second, Third and Fourth Year Commerce students: 10.00 a.m. to 12 noon and 1.00 p.m. to 3.00 p.m.
Wednesday, September 18	Freshman Academic Orientation.
	Registration of Second, Third and Fourth Year Science and Engineering students: 10:00 a.m. to 12 noon and 1.00 p.m. to 3.00 p.m.
Thursday, September 19	Registration of Freshmen: 10.00 a.m.
Friday, September 20	Religious Orientation Day.
Monday, September 23	Lectures begin.
Tuesday, October 1	Last day for Registration.
Monday, October 14	Thanksgiving Day—full holiday.

ACADEMIC CALENDAR

1963-1964

1963

Monday, November 11	1.00 p.m. — Anniversary Mass for the deceased members of the staff and students.
Monday, December 16	Freshman mid-year tests begin.
Saturday, December 21	Last day of lectures before Christmas vacation.

1964

Friday, January 3	Mid- year final examinations begin in all faculties.
Wednesday, January 8	Second term lectures begin.
Friday, January 31	Father Rector's Holiday.
Thursday, March 12	Celebration of the Feast of St. Ignatius Loyola.
Wednesday, March 25	Last day of lectures before Easter recess.
Tuesday, March 31	Lectures resumed.
Saturday, April 11	Last day of lectures.
Wednesday, April 15	Final Examinations begin.
Saturday, May 23	Convocation.

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Lecturer, Department of Geotechnical Science

Bessner, M. L., B.Comm. (McGill), L.A. (McGill), C.A.,
Assistant Professor, Department of Accounting, Chairman of the Department

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Vicas, A. G., B.Comm. (McGill), M.A. (Princeton),
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Wardell, Rev. H., S.J., B.A. (Montreal),
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Wardy, Mrs. B., B.A. (McGill),
Lecturer, Department of Classics

Wareham, R., B.A. (R.M.C.), M.A. (Michigan),
Assistant Professor, Department of English

Waters, Mrs. K. E., B.A. (McGill), M.A. (Oxford),
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Whitehall, E. C., C.A.,
Lecturer, Department of Accounting

Yalcin, A. S., B.Eng. (Cornell), M.Sc. (Cornell), Ph.D. (Toronto),
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Yates, Miss D., B.A. (Dalhousie), B. Ed. (Acadia), Certificat de Français Littéraire (Sorbonne),
Lecturer, Department of Modern Languages

HISTORY OF LOYOLA COLLEGE

The origins of Loyola College may be traced to the opening of the Collège Ste.-Marie in 1848, which resumed in Montreal the work of the historic Jesuit College of Quebec, opened in 1635. From its conception the classical course at the Collège began with both languages, French and English, on an equal footing. From 1888 to 1896 the classical course in English was operated as distinct from that in French, both considered separate units within one institution.

On September 2, 1896, Loyola College was opened at 2084 St. Catherine Street West. Three years later, on March 10, 1899, the College was incorporated by an Act of the Quebec Legislature, as an arts college in the traditional classical sense of arts in the Province of Quebec.

Laval University officially extended its Bachelor of Arts Degree to Loyola students under the special privileges granted by the Holy See in the Constitution "Jamdudum" which gave to Loyola College autonomy in the organization of its courses of study and in setting and correcting examinations. A similar arrangement now obtains with the University of Montreal.

Since the early days of Loyola, many changes have occurred, especially evident in the evolution of curriculum which more and more set the College in the Anglo-Canadian tradition. For instance, the eight-year course was broken up into two distinct four-year units (1919) and options were introduced (1921), confirming three distinct courses, at least in the last two years of college: Arts (General), Arts (Pre-medical), Arts (Pre-Science).

In 1943 other changes were initiated which transformed Loyola into the developed academic institution it is today. A distinct Faculty of Science was established, offering Honours Chemistry and Honours Mathematics courses; the first three years of Engineering were introduced, in Civil, Mechanical, Mining, Chemical and Metallurgical Engineering, as well as in Engineering Physics. A Faculty of Commerce was opened in 1948; major fields in Economics, English and History were established in 1953, and Honours courses in these subjects in 1958. An Extension Department and a Summer School were founded in 1957 to fill the need for those unable to pursue their studies during the day and to provide a public service.

The academic world soon recognized the new status of Loyola: the Chemical Institute of Canada (CIC) approved the Honours Chemistry program as fulfilling all the requirements for professional standing in its Institute; the Engineering Institute of Canada (EIC) recognized the competence of Loyola's Engineering Department; the Institute of Chartered Accountants of Quebec accepted the work done in the Commerce course, a major in Accounting, and granted the same privileges to Loyola graduates as were conferred on graduates of other older institutions; the Canadian Conference of Canadian Universities and Colleges accepted Loyola as an autonomous member. All faculties of the College have prepared students for and have sent them to the graduate schools of American, British and Canadian universities, which have conferred Engineering, Master's and Doctoral degrees on them.

The growth of Loyola has made noticeable changes; for example there are now four faculties and fifteen departments; the number of lay members of the staff has increased very greatly; and, there has been a very ambitious building program established to provide the necessary physical facilities.

Besides the Regular courses Loyola also offers Extension courses in the evening. Most of these are given during the Regular winter session, but some are offered in the evening during the summer as well. Credits in Extension courses can count towards a B.A., B.Sc. and a B.Com. For more information about Extension courses write the Dean of Extension, Loyola College, Montreal 28.

AIM OF LOYOLA COLLEGE

The aim and purpose of Loyola College has been stated very well by John Henry Cardinal Newman in a Sermon preached in the University Church at Dublin entitled "Intellect, the Instrument of Religious Training" in which he states:

> ... I wish the intellect to range with the utmost freedom, and religion to enjoy an equal freedom; but what I am stipulating for is, that they should be found in one and the same place, (i.e. religion and science) and exemplified in the same persons ... I wish the same spots and the same individuals to be at once oracles of philosophy and shrines of devotion. It will not satisfy me, what satisfies so many, to have two independent systems, intellectual and religious, going at once, side by side, by a sort of division of labour, and only accidentally brought together. It will not satisfy me, if religion is here and science there, and young men converse with science all day, and lodge with religion in the evening. It is not touching the evil, to which these remarks have been directed, if young men eat, and drink and sleep in one place, and think in another; I want the same roof to contain both the intellectual and moral discipline. Devotion is not a sort of finish given to the sciences; nor is science a sort of feather in the cap, if I may so express myself, an ornament and set-off to devotion. I want the intellectual layman to be religious, and the devout ecclesiastic to be intellectual ... Sanctity has its influence; intellect has its influence; the influence of sanctity is the greater on the long run; the influence of intellect is greater at the moment. Therefore in the case of the young, whose education lasts a few years, where the intellect is, *there* is the influence. Their literary, their scientific teachers, really have the forming of them ...

This is Loyola's reason for existence; this is Loyola's aim.

FACILITIES

BUILDINGS. Loyola College consists of seven buildings located on a fifty-acre site in the west end of Montreal. These structures are: the Refectory Building (built in 1916); the Administration Building (1927); the Stadium and Cafeteria (1923); the Chapel and Auditorium (1933), the Central Building (1947); the Student Residence (1960); the Drummond Science Building, (1962); the Hingston Hall (October 1963). In the near future, the recently remodelled Junior Building will become available for lecture rooms and offices; a new Library Building will provide additional study areas and improved library facilities; and the new Student Residence

will have accommodations for 300 students. At a later stage, an Engineering Building, a new Gymnasium, and a Student Union Building, will add greatly to the facilities of the College.

LECTURE ROOMS. The 25 lecture rooms have a total seating capacity of 1,600. The amphitheatre in the Drummond Science Building can seat 350 students; the auditorium has a seating capacity of 750.

LIBRARY. The present main library houses over 42,000 volumes and more than 300 journals and periodicals. The library in the Drummond Science Building can seat 90 students. Reading rooms in the Central and Refectory Buildings can accommodate a further 220 students.

LABORATORIES. About 60,000 square feet of floor space is devoted to science laboratories, shops, and offices. In addition, there are five engineering laboratories, a fully-equipped language laboratory, and a computer room housing an IBM 1620 Data Processing System and associated equipment.

MAIN CHAPEL. The College Chapel has a seating capacity of about 500.

RESIDENCE. The present student residence has rooms and facilities for 30 students. The new residence, the Hingston Hall, will open in October 1963 and will provide accommodation for 300 students.

STADIUM. The stadium has a regulation-size artificial ice surface.

INCOME AND NEEDS OF THE COLLEGE

The endowment of Loyola College in buildings and educational equipment is in excess of *six* million dollars. The Development Plan of Loyola College calls for a Students' Union, a Library and a Gymnasium. The present High School Building will have to be replaced by a building on another site.

It is expected the Government of the Province of Quebec will provide substantial financial help in this physical expansion. However, the College must find funds for its part of the expansion costs and to cover other capital expenditures for which it will receive little or no assistance from the Province.

Though *there are scholarships* and bursaries offered presently, they are inadequate to meet the increasing number of requests from talented students for financial aid in obtaining a college and university education. Both annual and founded scholarships and bursaries are needed for this worthy purpose. The names of the

donors, or the names of the persons in whose memory they are given, will compose the titles of these scholarships and bursaries.

Gifts or bequests to Loyola College for religious, educational or *capital expansion purposes* will permit the donor to enjoy the benefits from the relevant exemptions under our tax laws. For the guidance of those who may desire to make benefactions to the College by testamentary bequest, the following form is suggested:

I give and bequeath to Loyola College, Montreal, in the Province of Quebec,..dollars.

SERVICES TO STUDENTS

RELIGIOUS ACTIVITIES

In order to make *concrete* and *personal* the religious truths the students have studied scientifically in the Theology courses, Loyola College offers a program of religious activities calculated to nourish and deepen their personal and apostolic dedication.

Daily Mass

A special Students' Mass is offered daily, Monday to Friday, at 1.00 p.m. in the College Chapel. Two confessors are always available during the Mass.

Sodality of Our Lady

This organization was established by the Society of Jesus four centuries ago and commissioned by Pope Pius XII in 1948 to meet the needs of the Church by forming competent and dedicated lay leaders. The members undertake an intensive spiritual formation, and dedicate themselves to assist the spiritual, intellectual and social progress of the College, and to promote work in the hospitals and among the poor and underprivileged of the City.

Apostleship of Prayer

The Apostleship is an association with a two-fold aim: first, to instill into the students that apostolic spirit which, as public men, it is hoped they will later on exercise in the world; and secondly to join in the great crusade of prayer for Christian unity.

St. John Berchmans Society

This Society has as its aim the training and supplying of servers for the Masses and other liturgical functions which take place at the College. The Society is open to all students, resident and non-resident.

Religious Orientation Day

On Friday, September 20, a Religious Orientation Day will be held. The purpose of this day is to give students the opportunity to dedicate their academic year to God. In order to accommodate all students, the sacrifice of the Mass will be offered several times during the day, and confessors will be on duty all day. A series of orientation conferences will be given by a guest speaker.

Weekend Retreats

Four weekend retreats will be given for College students at the Manresa Retreat House, Beaconsfield. These retreats will begin on a Friday evening and end on Sunday afternoon. They will be given on the following weekends: Nov. 22-24; Feb. 14-16; Feb. 21-23; and Feb. 28-March 1. A nominal fee is charged for room and board at the retreat house.

STUDENT COUNSELLING

Education is not merely the acquisition of facts, or skills, or even of insights. It is essentially a growth, a process which leads a person to spiritual, intellectual and social maturity.

This process, however, is not automatic. The student is ultimately responsible for the direction he gives his life. He must make his own decisions and solve his own problems. But he need not do so blindly nor without help.

In order to provide students with the opportunity of obtaining guidance and advice on a personal level, the Student Counsellor is always available for consultation. Students are invited to visit him in his office, either by appointment, or otherwise.

STUDENT ACTIVITIES

Student extracurricular activities which number approximately thirty help to develop in the student body a sense of responsibility, a capacity for civilized dialogue and government and a love for the school. These activities embrace all aspects of education: religious, political, intellectual, social, athletic and cultural. All societies are initiated, developed and financed by the students themselves, under the direction of the Student Government and its Central Committee, the Student Administrative Council.

The Student Government moreover expresses the duties and the rights of the Student body. For a detailed report on these activities and the constitution of the Student Government, consult the Student Handbook.

Eligibility

Students taking part in dramatic performances, public debates, oratorical or elocution contests, or athletic events, as well as all

officers of student organizations are subject to the following eligibility rules: (1) They must have shown satisfactory conduct and application and must remain in good academic standing; (2) they must not be under censure at the time of their election or appointment.

Social and Cultural

The chief social events of the year are The Winter Carnival, the Athletic Dance, and the Awards Banquet. Literary endeavours find expression in the *Loyola News* which is published each week; more serious ventures are the *Amalgam*, *Amphora*, and the *Loyola Review*. A Publications Commission composed of students and a Faculty Moderator is on the threshold of existence. Drama, always at a high level of excellence at Loyola, produces classical, modern and original plays.

Discipline

It is the constant purpose of the College to encourage the growth of personal and corporate responsibility consistent with the "Christian man". Serious breaches of the code that demands respect for order, morality, personal honour, and the rights of others will necessitate withdrawal from the College. This aspect of student education is the direct responsibility of the Dean of Men.

Medical Examination

Students entering Loyola College for the first time are strongly urged to have a medical examination before commencing their college life. Accident insurance may be obtained at the Bursar's office.

THE MILITARY SERVICES

There are three military plans to qualify the undergraduate as an officer in the Canadian Forces: Naval (UNTD), Army (COTC), and Airforce (URTP). To be eligible the undergraduate must be seventeen years or older, be medically fit and meet the enrolment standards. He must be a Canadian citizen or a British subject resident in Canada with the certificate of a landed immigrant.

U.N.T.D.

The University Naval Training Division is a plan whereby suitable undergraduates are given three years training leading to a commission in the R.C.N. Reserve. Loyola cadets undergo winter training one evening a week at H.M.C.S. Donnacona, 2055 Drummond St., Montreal, and are sent to either the Atlantic or Pacific coast during the summer months. They are given training in such subjects as navigation, communications and seamanship, including a period of approximately four weeks sea training in an operational ship. On these courses they visit various ports of call in the Western Hemisphere.

Probationary Cadets are selected early in October of each year and appear before a selection board in January to become confirmed as cadets in the R.C.N. Reserve.

Loyola College Contingent C.O.T.C.

The purpose of the Loyola College Contingent, Canadian Officers' Training Corps (COTC) Program is to provide a means whereby Loyola undergraduates can qualify for appointment as commissioned officers in the Canadian Army.

Through the Canadian Officers' Training Corps the student can develop leadership, gain useful technical knowledge and qualify for the prestige of the Queen's Commission with the advantages of some earnings during the academic year and full time summer employment at good rates ($225.00 a month and transportation, uniforms, food, accommodation and medical care).

The training program covers a minimum of two and a maximum of three years. Each training year has two parts: a theoretical phase of approximately 64 one hour periods, which is taken at the Loyola C.O.T.C. Mess during the academic year, and a practical phase consisting of a minimum of 12 weeks to a maximum of 22 weeks of instruction each summer. The practical training is normally taken at a corps school or a unit of the Regular Army. The third and final practical phase is normally taken with a Regular Army unit. where the theory and practical training given previously is put to the test, and the talents of the young officer are developed. The young officer may be selected for training with the Canadian Forces in Europe.

Applications for enrolment in the Loyola College Contingent, C.O.T.C. are accepted up to January 15th of each year. Accepted students are enrolled as Officer Cadets and retain this status for the first two years.

Members of the C.O.T.C. who complete the first two theoretical and practical phases of training and intend to continue their college courses, will be commissioned in the rank of 2nd Lieutenant. On completion of the third phase of theoretical and practical training and attainment of the required educational standards, they are eligible for immediate appointment to the Regular Army or Militia in the rank of lieutenant and are qualified to the rank of Captain in the Militia.

Capt. J. A. Kisielius, Resident Staff Officer, Loyola College, representing the Regular Army on the Campus may be consulted at the C.O.T.C. quarters in the Stadium Building.

U.R.T.P.

Successful candidates in the University Reserve Training Plan (RCAF), are enrolled in the Primary Reserve in the rank of Flight Cadet.

For Flight Cadets, each year is divided into two training periods:

(1) Winter Training: This takes place at McGill University, 475 Pine Ave. W. The Winter Training syllabus provides for 64 hours of lectures and parades during each academic year. The training is designed to familiarize U.R.T.P. personnel with the duties and responsibilities of junior officers and to give a general knowledge of the R.C.A.F., its functions and its role in defence. The syllabus includes lectures in world affairs, geopolitics, air power, civil defence and military history.

(2) Summer Training: This is carried out at R.C.A.F. Stations. A maximum of 22 weeks of R.C.A.F. training and employment terminating on or before September 15th is offered. All successful candidates for the U.R.T.P. attend officers' school in the first half of the first summer. Those who are enrolled in a branch for which a course is conducted then proceed on formal course training while the remainder receive supervised employment at Stations across Canada. Formal courses may be of one, two, or three summers' duration at an overseas unit, depending on the branch of training.

Information covering U.R.T.P. may be had by contacting F/L. J. C. Sloan at VI. 4-1932 or at 475 Pine Ave., W.

Regular Officer Training Plan (R.O.T.P.)

The Armed Forces of Canada subsidize a limited number of undergraduate college students who are willing to accept a military service obligation as a commissioned officer under the provisions of the Regular Officer Training Plan.

College students found acceptable will be enrolled in the service of their choice (Royal Canadian Navy, Canadian Army (Regular), or Royal Canadian Air Force) as an Officer Cadet on a career basis. Upon achievement of degree status and fulfillment of military training requirements, Officer Cadets are promoted to commissioned rank and are required to serve a minimum of three years immediately thereafter in the service which sponsored their training. After such service, an officer may be released at his own request providing a period of national emergency does not exist.

A student may qualify for subsidization under this Plan if: a) he is a Canadian citizen or British subject resident in Canada with the status of a landed immigrant; b) he has attained his 16th but not his 20th birthday on the 1st of January of the year of enrolment in College; c) he is physically fit for enrollment in the branch and service of his choice; d) he is single and intends to remain so during his Officer Cadet training period.

Successful applicants will receive financial assistance as follows: pay — $65.00 per month; living allowance — $65.00 per month; holidays up to thirty days annually with full pay and allowances. Tuition and other essential college fees are provided by the Depart-

ment of National Defence. Text-book and instrument grant are $75.00 per year. Medical and Dental care expenses, uniforms and accoutrements are provided by the Department of National Defence. Aircrew Trainees receive $75.00 per month flying pay while undergoing summer training.

As an Officer Cadet, each student will undertake a) continuation of a normal academic workload and maintenance of a satisfactory standing therein; b) military training, which is divided into two phases, theoretical and practical, taken during the student's first, second, third and fourth year as an R.O.T.P. Cadet.

(i) The Theoretical Phase consists of academic military studies presented as lectures, lecture demonstrations and discussions on subjects that will provide a background for the practical phase.

(ii) The Practical Phase is full time duty with the Regular Forces taken during the summer vacation.

Students interested in the R.O.T.P. may obtain further information and application instructions from Capt. J. A. Kisielius, R.S.O., Loyola College C.O.T.C.

LOYOLA ALUMNI ASSOCIATION

The Loyola Alumni Association has as its object to advance the interest and to promote the welfare of Loyola College and of the Association and its members.

A General Meeting is held every year, generally at the College. At this meeting officers for the coming year are elected and all matters of general business transacted.

The Loyola Alumni Association sponsors the Loyola Alumni Student Loan Fund, the Post-Graduate Bursary, and the Under-Graduate Bursary.

The office of the permanent Secretary is located at Loyola College.

PLACEMENT BUREAU

The Bureau is operated by the University Section of the National Employment Service with a full-time Officer on duty. The recruiting of university students by employers is a continuous process which starts early in the academic year. Almost all of the major national employers are active in this recruiting, and many of the larger firms send recruiting teams on campus. The major emphasis of the NES Student Placement Service is geared to the placement of graduating and graduate students in employment of a continuing nature. However, assistance in finding summer jobs and part-time employment is given to all students.

STUDENTS EXTRACURRICULAR ACTIVITIES

LOYOLA COLLEGE ATHLETIC ASSOCIATION

The Loyola College Athletic Association was formed to aid the Director of Athletics in the promotion and supervision of all athletics in the College and to create and foster a proper college spirit among the students.

An Athletic Board of Control, composed of Faculty Members guides the policy and overall direction of the Athletic Program.

The College is a member of the Ottawa — St. Lawrence Intercollegiate Athletic Association and competes with other colleges in the following activities: Football, Soccer, Hockey, Basketball, Tennis, Golf, Skiing, Swimming and Curling.

A regular program of Intramural Athletic Activities is conducted during the year. The aim of this program is to offer athletic competition to those students who do not compete on the intercollegiate level.

NO STUDENT MAY PARTICIPATE WITH AN OUTSIDE ORGANIZATION IN ANY ATHLETIC ACTIVITY WITHOUT THE WRITTEN PERMISSION OF THE L. C. A. A.

FACULTY SOCIETIES

Arts Society

This is one of the older campus societies. It has, in the past year, presented such projects as a freshman integration program, a committee for the dissemination of literature on post-graduate courses, a series of prominent guest speakers and an annual banquet.

Chemical Institute of Canada

This is an organization for professional chemists, and has student chapters at many Universities across the country. The Loyola chapter, incorporating students from Marianopolis College, now in its fourth year of operation, offers to students an unequalled opportunity to familiarize themselves with the leading people, ideas, and opinions in chemistry. Open to all students in general or honours chemistry, for $2.00 per year, the Institute offers a monthly magazine, chances to attend (free of charge) the monthly meetings of the Montreal Chapter and hear leading chemists discuss their work, and a variety of tours and social events.

Commerce Society

The Commerce Society, two years younger than the faculty it represents, has, right from its inception, been one of the liveliest societies on campus. The Society sponsors tours, the Red Cross blood drive (an annual event for the last decade), "careers" night and many other activities.

The Investment Club is an organization of special interest within the Commerce Society, though it is open to all who wish to play the stock market. Each member is theoretically given $10,000 at the beginning of the year, which he is supposed to invest. A nominal fee is charged for brokerage and all transactions are carried out with reference to the listings in the daily newspapers. Prizes are awarded at the end of each year for those who have earned the most money. The purpose of the Club is to give members some indication of the fluctuations, risks, and fortunes of the stock market without involving them in actual losses.

Engineering Institute of Canada

The Engineering Institute of Canada's Loyola Chapter, now entering its second year, boasts over 100 members who enjoy, for $2.00 a year, a monthly magazine, tours, talks, and banquets, all related to engineering. The Institute is a professional organization to which many Canadian engineers belong. Members can be recognized by their distinctive 'slide-rule' tie-bars.

Premedical and Predental Society

The Premedical and Predental Society presents a program similar to that of the other science societies, but slanted, naturally enough, toward the interests of the premedical and predental students (all of whom are automatically members). After several years of limited activity, radical innovations are planned which include tours to mortuaries to see cadavers dissected, the production of a magazine, *Cadduceus*, and active dissemination of information regarding medical schools.

Society for the Advancement of Management

SAM is an international organization of businessmen with student chapters at many institutions of higher learning. The Society, in this College, has a strong following among the Commerce students and has achieved some remarkable successes in its programming since it came here four years ago. The Society publishes a magazine, and the student chapter organizes tours of various business establishments, as well as bringing noted men of the business world to the College to address students.

Science Students Association

The SSA, youngest of the three major faculty associations, presents a varied program of events with a scientific bias, the most important being tours of various plants, regular showings of scientific films, and the annual Science Banquet, held in March. *Eureka* is the official paper of the Association. It is also hoped that greater liaison with the CIC and EIC chapters and the Premed and Predent Society will produce other projects of interest to all science students. Science pins, attractive additions to any lapel, will be on sale throughout the year at $1.00 apiece.

FEES

SCHOLASTIC YEAR
1963-1964

REGULATIONS REGARDING PAYMENT OF TUITION AND FEES

Tuition and Fees must be paid at the time of registration. However, where this is not possible, a student may, in special cases of hardship, and with the consent of the Bursar, pay Tuition and Fees in two installments, the first at registration and the second on January 15th. following. In such cases an installment fee of $10.00 will be charged.

Evidence of Scholarship Awards or Bursaries must be submitted at time of registration; otherwise fees must be settled in accordance with the above.

Students will not be considered registered and may not attend classes until the required Fees have been paid or arranged with the Bursar. Failure to make payments of tuition, fees or other amounts owed the College, when they fall due, or to arrange for such payments before their delinquent dates, is sufficient cause, until the debt has been adjusted with the Bursar's Office, to bar the student from classes or examinations and withhold diploma, scholastic certificate or transcript of record. Any injury done to the walls or furniture of the College will be charged to the offender's account.

Drafts, cheques, money-orders, etc., should be made payable at par to "Loyola College" and addressed to the Bursar, Loyola College, 7141 Sherbrooke Street West, Montreal 28, Quebec.

All accounts are subject to revision for adjustment of errors.

GENERAL FEES—TUITION

ARTS (General Course)

All years...............$205.00 per half year $410.00 per year

ARTS (with pre-Medical subjects)

Freshman and
Sophomore...... $205.00 per half year $410.00 per year
Junior and Senior..... $215.00 per half year $430.00 per year

SCIENCE

All years...............$215.00 per half year $430.00 per year

ENGINEERING

All years...............$225.00 per half year $450.00 per year

COMMERCE

All years...............$205.00 per half year $410.00 per year

RESIDENCE

Loyola College, in the Fall of 1963, will open Hingston Hall, its new student residence building: it is a modern edifice, housing three hundred students. The aim of this residence is to promote a perfect student educational climate, academic, social and religious.

The fee will range between $650-700 per academic year.

For further information consult the Manager of Hingston Hall, Loyola College, 7141 Sherbrooke Street West, Montreal 28, Quebec.

STUDENT ACTIVITY

Student Administrative Council, Athletics, Drama, Debating, Publications, etc., including a $2.50 Student Union Building Fee (payable at registration).................................$32.50

SPECIAL FEES

PAYABLE AT REGISTRATION

Tuition, extra subjects (in addition to regular program)..$85.00
Registration Fee (payable on first entrance only)...   5.00
Late Registration Fee—for first day...................   10.00
                            —each succeeding day...........   3.00
Library Fee..   5.00
Laboratory Fee (non-returnable)
Arts (pre-medical)
Sophomore, Junior and Senior........................   15.00
Science and Engineering—All years....................   15.00

PAYABLE JANUARY 15th FOLLOWING REGISTRATION

Graduation Fee—All years............................   20.00

PAYABLE ON DATE OF EACH APPLICATION

Engineering Elementary Survey School, Course Fee.....   60.00
Supplemental examinations, each......................   7.00
Special Examinations.................................   15.00
Transcripts (Full)...................................   1.00
Transcripts (Partial)................................   .50
Infirmary—per day...................................   4.00

WITHDRAWALS AND ADJUSTMENTS

Any student who is forced to withdraw from a course or from the College is required to notify the Registrar in person or in writing.

If, after paying the fees, a student finds it impossible to attend the College, a refund of tuition fees only will be made on the following basis. Students withdrawing will be charged one-seventh of the total tuition for each month of attendance. Students withdrawing at the beginning of a month or at any time within a month are charged for the whole month.

ADMISSIONS

Admission to first year is granted to students with Junior Matriculation. Admission to second year is granted to students with Senior Matriculation. Admission to second and third years is granted to transfer students.

Admission is granted on the basis of ability, achievement and promise as evidenced by:

(1) Principal's Letter of Recommendation.

(2) Official Academic Records.

(3) Results of Aptitude and Attainment Tests, when available.

(4) Recommendation by the Admissions Committee, after interview if required. Sometimes the committee will recommend the admission of a mature student, over 21 years of age, whose secondary education has been interrupted by causes beyond his control. Sometimes it will recommend conditional admission, with probationary requirements. Any student who fails to satisfy his probationary requirements must withdraw and will not be considered for re-admission.

(Note: All documents submitted become the property of the College if the applicant is accepted).

Admission to First Year

In Canada, Junior Matriculation standing, with college entrance attainment, indicates ability, achievement and promise sufficient for admission into first year: specifically, *The Catholic High School Leaving Certificate*, Department of Education, Province of Quebec (11 papers), and *The High School Leaving Certificate*, Department of Education, Province of Quebec (10 papers), with 50 percent in each paper and an average of 65 percent for general studies, but 70 percent for honours studies and the Engineering program. Consult individual study programs for subjects required. English Literature, English Composition, Elementary Algebra and Elementary Geometry are always required.

Some equivalents of the above are: in the United States, Grade XII certificate with the college recommending mark as announced by the particular High School; in Great Britain, the *General Certificate of Education* if it indicates satisfactory completion of five subjects at the ordinary level (including English, another language, and Mathematics); in Latin America, a certficate showing satisfactory completion of courses necessary for admission to university in the applicant's own country.

Admission to Second Year

In Canada, Senior Matriculation or its equivalent is sufficient for admission to second year if it is attained with 50 percent in each paper and an average of 60 percent.

The General Certificate of Education, if two of its five subjects are at the Advanced Level, and all subjects are appropriate to the program desired, will admit an applicant to second year.

Transfer Students

A transfer student is a student applying for admission to advanced standing with credit given for work done at another college or university.

No student who is ineligible to re-register at his previous college or university will be admitted to this college.

No transfer student may be admitted directly into fourth year. Two full years of residence are required.

Transfer students must present to the Registrar by July 15th an official certificate of standing (normally not less than 60 percent average) and a statement of honourable dismissal.

Applications for admission should be addressed to the Registrar, Loyola College, 7141 Sherbrooke Street, West, Montreal 28, not later than July 15th.

Registration

Registration takes place on the days and times assigned. These are given in the Academic Calendar at the beginning of this book. A Late Registration fee is charged for registering later than the time assigned—$10.00 for the first day and $3.00 for each succeeding day.

Each one registers in the Department designated by the name of his Continuation Subject.

ACADEMIC REGULATIONS

Classification of Students

a) A full-time student is one who is registered in four or more full undergraduate courses.

b) A part-time student is one who is registered in less than four full courses.

c) A special student is one who is not proceeding to a degree or certificate.

d) A student on probation is one who is placed on probation by the Committee on Admissions or by the Committee on Academic Standing. In case of failure such students will not be permitted to repeat their year but will be required to withdraw.

Residence Requirements and Length of Program of Studies

The number of years of attendance required for the attainment of any degree or certificate is as indicated in each program. This time may be reduced at the discretion of the Committee on Admissions through the transfer of credit from another university. In all cases, attendance at classes for at least two academic years shall be required.

A candidate may be excused attendance for not more than one full academic year or the equivalent through the transfer of credit obtained by attendance at or by Correspondence Courses from another approved university.

A student may take courses for credit in Summer Schools conducted by this or other institutions, subject to the prior approval of the Head of the Department which gives the course and the Head of the Department in which he is registered. Such courses, if approved, may be counted towards degrees.

Normally, students who enter with Junior Matriculation standing, will require four complete academic years to obtain a Bachelor's degree.

Course Load

The normal course load for each year is indicated in the program for each degree.

Normally a student will be allowed to take only one course in excess of the normal load. The Committee on Academic Standing may, in exceptional cases, allow a student to take two courses in excess, but only if the student has obtained better than average standing in the previous academic session. The year's average will be determined from all courses for which he is registered.

Under certain conditions, a student may be allowed to transfer from one course to another in any year. He must obtain the approval of his major department. The appropriate instructors should be informed, and a special form should be filled out and given to the Registrar.

Classification of Courses and Grades

a) Courses are referred to as: *Half-Courses*, in which the subject matter is normally completed in one semester; and *Year Courses* or *Full Courses*, in which the subject matter is normally completed in one year.

b) The grading is as follows:

80 –100 Grade "A" or First Class Honours.

65 – 79 Grade "B" or Second Class Honours.

60 – 64 Grade "C" or Third Class Honours.

50 – 59 Grade "D".

35 – 49 Grade "Fx" —Failure, with supplementary examination privileges, in certain cases.

0 – 34 Grade "F" —Failure, with no supplementary examination privileges.

c) The Bachelor's Degree is granted according to these traditional categories:

Cum laude	to students with a four year average of between 70% and 79%.
Magna cum laude	to students with a four year average of between 80% and 89%.
Summa cum laude	to students with a four year average of 90% or over.

Attendance Regulations

A student is expected to attend all lectures, discussion groups, seminars and laboratory periods of any course in which he is registered.

A student who has been absent from more than 20% of the lecture and/or laboratory periods in a course which he has failed, will not be allowed to write a supplemental examination in that course. The course must be repeated, or, if an elective, an equivalent course taken.

Examinations

a) Regular examinations:

Final examinations in first semester courses are written at the beginning of January; final examinations in all other courses are written in April and May.

b) Mid-Year Tests:

Tests are conducted in Freshmen courses, on assigned dates before the Christmas vacation. One-hour tests in regular class periods may be held by any Instructor whenever he thinks advisable.

c) Supplemental examinations:

A supplemental examination is one set in a subject in which a student (who has not failed his year) has failed to obtain standing at the regular examination, but who has obtained a minimum of 35%.

All supplementals in Year Courses and in second semester courses are held in late August. Supplementals for first semester courses however, for Seniors, are held in May. Applications to write August supplemental examinations must be sent to the Registrar before July 15th.

If a student has written and failed the first regular examination in a subject and is eligible to write a supplemental, he must do so the first time this supplemental is scheduled. If he fails to write it at this time, or if he writes and again fails it, he must repeat the course, or an equivalent, if an elective, before re-examination is allowed.

If a student is unable to write the supplemental examinations here, he may be granted local privilege upon the payment of the required fee. The student must secure, as presiding official, a qualified member of an educational institution. The student must pay that institution the fee it charges for its services.

For those requesting local privileges, the name, address and consent of the presiding official must be in the Registrar's Office by July 15th, otherwise the student must write at this College.

d) Special examinations and *Aegrotat* standing:

A special examination is an examination other than the regular or supplemental examination, permitted by the Committee on Academic Standing for a grave reason and after special application. No special examination or *aegrotat* standing will be allowed except on the recommendation of the Chairman of the Department concerned, after consultation with the instructor involved.

A student who, because of illness, has failed to write the final examinations in January, or the final examinations in April and May, in any courses, may apply for *aegrotat* standing or for permission to write a special examination, provided he presents a medical certificate to the Registrar.

Reasons other than medical must also be fully documented for consideration by the Committee on Academic Standing.

These documents must be submitted in writing to the Registrar not later than one week after the date in which the examination was held.

Special examinations normally will be written at the time of the supplemental examinations.

e) Examination Regulations:

A candidate may not be admitted to the examination hall later than thirty minutes after the beginning of an examination, and he may not leave within thirty minutes after the distribution of examination papers.

No articles such as textbooks, notes, books of tables, data sheets, paper, written material, hand-bags, etc., may be taken into the examination hall unless authorized by special instructions. No papers may be taken from the examination hall.

A candidate may not communicate with another candidate; he may not copy from another nor allow another to copy from him.

A violation of these rules may lead to the cancellation of the candidate's examination paper and even to his expulsion from the College.

Determination of Standing

Term Work

In all subjects, the ratio of term-work to examination marks is determined by the Department concerned. In general, the final examination will not count for less than 50%.

An Instructor, with the approval of the Dean and the Chairman of the Department concerned, may require that essays, term papers, etc., be completed satisfactorily and in due time before a student will be granted permission to write the final examination. If the conditions are not fulled, the student will be debarred from writing the final examination.

Requirements for Promotion

a) A student is eligible for promotion if :
   i). He has obtained the required pass average; and if
   ii). He has not failed in more than two full courses.

b) If a student has failed to obtain the required pass average he must repeat the year's work.

c) If a student has obtained the pass average but has failed in more than two courses, he must repeat the year's work.

d) A student who has failed a course, or courses (with a minimum of 35%) but who is not obliged to repeat the year's work, must write supplemental examinations.

e) Normally, a student will be allowed to carry only one condition, (a full course failed) into the following year. The Committee on Academic Standing may make exceptions.

f) A student must obtain complete standing in his first year before he may register for the third year; and in his second year, before he may register for the fourth year.

g) *Normally* a student must have complete standing in third year before he may register for fourth year. The Committee on Academic Standing may make exceptions.

Transfer Students

The promotion of students who transfer to another Faculty or program of studies will be decided upon by the Dean and the Chairman of the Department to which he is transferring.

Failures, Repetition and Withdrawals

Failures

A student fails his year if he has not obtained a passing average; or if, with a passing average, he has failed more than two full courses.

Subjects which depend directly upon the work of a preceding year may not be taken by a student who has failed in the work of the preceding year.

A student who fails to pass a supplemental examination will not be eligible for re-examination without a further year's attendance in the course in which he has failed.

Repetition

A repeating student is one who has failed the previous year **here,** or at any other recognized university, regardless of whether **he is** registered in the same or a different faculty.

A student may repeat a course once only, except with permission of the Committee on Academic Standing. However, he may be granted credit in a course in which he has obtained 65% or more. He may not take courses which are scheduled in advance of the year he is repeating.

Repeating students in the first year who do unsatisfactory work on the Christmas examinations shall be required to withdraw, subject to an appeal to the Committee on Academic Standing, which appeal should be submitted in writing and sent to the Office of the Dean of Studies within one week after the publication of the results. Unsatisfactory work is defined as having an average below 50%.

Withdrawals

a) A student who is repeating a year and fails to obtain a pass average in the final examination must withdraw.

b) A student who is repeating first year and fails to obtain 50% in the Christmas tests must withdraw.

c) A student who is on probation and fails to obtain a pass average in the final examinations must withdraw.

d) A full-time student who fails his year and who has already failed twice (either here or elsewhere) must withdraw.

e) A student who in his first year fails to reach a minimum standard in the Christmas tests must withdraw. The minimum standard is defined as an average of 30%.

Rereading

While all papers in failed subjects are re-read before the grades are submitted to the Registrar's Office, and care is taken to record marks accurately, a student who considers that some factor affecting the final mark on the examination was not considered by the examiner, may appeal to have the paper reviewed. This request should be submitted in writing to the Registrar within two weeks of the official publication of student grades, together with the appropriate fee.

Reports

Reports of final examination results of all students are sent to their homes. A mid-year report is also sent to the homes of First Year students.

SCHOLARSHIPS, BURSARIES AND AWARDS

SCHOLARSHIPS

A Scholarship is an award granted annually to a student for academic excellence, and which may be renewed if the student maintains an above-average (70% overall average) academic standing. The fact that the student has been awarded a scholarship will be duly confirmed by a parchment stating these facts.

The students will not receive cash unless otherwise stated, but their tuition fees will be fully or partly paid by the scholarships and only the remainder by the students themselves, depending on the value of the scholarships awarded.

The value of Endowed Scholarships may fluctuate depending on the current interest rates. The figures given are based on a five per cent (5%) interest rate.

Excepting students from Grades 11 and 12 entering Loyola for the first time (these may write competitive examinations the date of which will be announced), candidates for scholarships must have completed at least one year at Loyola College.

No student will be considered eligible for a scholarship who has failed any year in his college or university education. Consideration will, however, be given to the student who has obtained more than a 70% average in each of the two years following the year repeated, e.g., a student who fails in Freshman may be eligible only in his Senior year; a student who fails in Sophomore, Junior, or Senior will not be eligible.

No student with supplemental examinations will be eligible for a scholarship, or if he already holds a scholarship, for its renewal.

For renewal of a scholarship, the student holding the scholarship must obtain an overall average of 70% or more for the current academic year and must have passed all his final examinations in the courses in which he is registered.

No student may hold more than one scholarship from the College at any one time.

By Closed scholarship is meant that the scholarship is at present held by a student and is renewable.

By Open scholarship is meant that the scholarship is available to the student who has obtained the highest academic standard in the Year and Faculty specified below, and who does not already hold another scholarship. In case of ineligibility the student with the next highest standing is eligible.

A. Endowed Scholarships

The Lilly F. Barry Scholarships:
1. Value: $400. Closed.
2. Value: $400. Closed.
3. Value: $350. Closed.

The Ursula Carling Scholarships: These are an endowment from the estate of the late Mrs. Ursula Carling.
1. Value: $250. Closed.
2. Value: $250. Closed.

The Cloran Memorial Scholarship:
Value: $80. Closed.

The Collins-Heffernan Scholarship: Funds from the Mary Ellen Heffernan Bursary, and from the Nulsen Collins Scholarship.
Value: $200. Open.
Conditions: Open to students entering Fourth Arts.

The Cuddy-Stanford Memorial Scholarship: Funds from the John M. Cuddy Scholarship, and from the Stanford Memorial Scholarship.
Value: $200. Open.
Conditions: Open to students entering Third Commerce.

The Dowling-Moriarty Scholarship: Funds received from the estates of the late Francis J. Dowling, and of the late Mrs. E. Stowell, widow of John Moriarty.
Value: $200. Open.
Conditions: Open to students entering Fourth Engineering.

The Mrs. F. J. Duckett Scholarship: From the estate of the late Mrs. F. J. Duckett.
Value: $200. Closed.

The Friends of Loyola Scholarship: From the funds endowed for the James Corcoran Scholarship, the Rev. William Doherty Scholarship, the Dollard Scholarship, and the Gregory O'Bryan Scholarship, and from funds given by the Students' Penny Scholarship.
Value: $200. Closed.

The Arthur Halley Memorial Scholarship: Endowment from P. F. Halley of St. John's, Newfoundland, in memory of his son, Arthur, a graduate of the Pre-Medical class of 1946, magna cum laude, who died on the eve of Convocation.
Value: $100. Open.
Conditions: Open to students entering Fourth Arts (Pre-Med) or Fourth Science (Pre-Med).

The Loyola Sodality Scholarship: Funds from the Sodality Scholarship and from the Loyola Scholarship Club Association Bursary.

Value: $200. Closed.

The Mahoney-Murphy Memorial Scholarship: Originally established as the Mother Ellen Memorial Scholarship, and as the John Walsh Murphy Memorial Scholarship.

Value: $200. Closed.

The Kenneth J. McArdle Memorial Scholarship: Donated by Mrs. Mary McArdle as a tribute to the memory of her late husband Kenneth J. McArdle.

Value: $125. Open.

Conditions: Open to students entering Second Science (Honours Mathematics or Major Mathematics.)

The St. Ignatius Parish Scholarship: Money collected and presented by the St. Ignatius Men's Association and originally known as the Coronation Arts Course Scholarship.

Value: $100. Closed.

The Sharp-O'Reilly Memorial Scholarship: Funds from the Alice M. Sharp Scholarship, and from the Winnifred O'Reilly Memorial Bursary.

Value: $200. Closed.

B. Gifts by the College

Loyola College Scholarships:

First Year

Arts. Number: Seven. Value: $350. Open.
Commerce. Number: Five. Value: $350. Open.
Science. Number: Seven. Value: $400. Open.
Engineering. Number: Seven. Value: $450. Open.

Second Year

Arts. Number: Three. Value: $350. Two closed; one open.
Commerce. Number: Three. Value: $350. Three open.
Science. Number: Three. Value: 2 at $400; one at $350. Closed.
Engineering. Number: Three. Value: Two at $450; one at $350. Closed.

Third Year

Arts. Number: One. Value: $350. Closed.
Commerce. Number: One. Value: $350. Closed.
Science. Number: One. Value: $400. Closed.
Engineering. Number: One. Value: $450. Closed.

Fourth Year

Arts. Number: Two. Value: $350. Closed.
Commerce. Number: None.
Science. Number: Two. Value: $400. Closed.
Engineering. Number: None.

The Bartlett Memorial Scholarship: Value: $80. Closed.

The Doherty Memorial Scholarship: Value: $50. Closed.

The Gasson Memorial Scholarship: Value: $200. Open. Conditions: Open to students entering Third Commerce.

The Jones Memorial Scholarship: Value: $80. Closed.

The McCarthy Memorial Scholarship: Value: $200. Closed.

The McMahon Memorial Scholarship: Number: Two. Value: $80. Both closed.

The O'Bryan Memorial Scholarship: Value: $80. Closed.

The O'Dowd Memorial Scholarship: Value: $100. Closed.

The Rector's Scholarships: Number: Four. Value: One at $160; three at $150. One at $150 open.

C. Annual Gift Scholarships

The funds for these Scholarships are presented to the College for administration or to the students by the donors themselves. These Scholarships are Open or Closed as indicated, provided that the funds are available.

The L. J. A. Amyot Scholarship: Mr. L. J. A. Amyot of Quebec City paid the North American Life Insurance Company to issue a policy to Loyola College guaranteeing an annuity of one hundred dollars per annum for thirty years certain. This guarantee runs out in 1964. Value: $100. Open. Conditions: Open to students entering Fourth Science.

The Charles Brown Memorial Scholarship: Value: $50. Closed.

The Mrs. Charles Brown Scholarships: Number: Two. Value: $100. One Closed: One Open. Conditions: Open to students entering Third Commerce.

The Gutelius Memorial Scholarships: Number: Two. Value: $100. One Closed: One Open. Conditions: Open to students entering Fourth Commerce.

The Knights of Columbus Council 284 Scholarship: Value: $150. Closed.

The State Council, Knights of Columbus, Province of Quebec Scholarship: Value: $100. Closed.

BURSARIES

A Bursary is a sum of money given to a student in order to assist him financially in the continuation of his studies.

A Bursary will take the form of a credit made to the student's tuition account.

Students desiring bursaries must make written application to: The Chairman, Scholarship Committee, Loyola College, Montreal 28.

Applications for bursaries must be made:

a) no later than September 1 for bursaries covering either full tuition or part tuition; applications received after the closing date will be retained and considered only after the second closing date and only for part of tuition;

b) no later than December 20 for bursaries covering part of the student's tuition. Applications received after this second closing date will not be considered and will be returned to the applicants.

Students are permitted to make only one application in any given academic year.

Students are also reminded that they may also make application to the Province of Quebec for bursaries and also to other provincial and state agencies for financial aid.

The IBM Thomas J. Watson Memorial Bursaries: Donated by the International Business Machines Company Limited as part of the IBM Thomas J. Watson Memorial Bursary Program. Number: Two. Value: $500 each. Conditions: Awarded annually to needy undergraduates in any year and faculty who are of good academic standing. Please apply at the Scholarship Committee Office. Closing date is December 20.

The Loyola Alumni Association Undergraduate Bursaries: Number: Four. Value: $100. Conditions: Awarded annually to talented and deserving students who have completed at least one year at Loyola College. Apply at Alumni Office.

The Loyola Alumni Association Postgraduation Bursaries: Number: Four. Value: $200. Conditions: Awarded annually to talented and deserving students of the current graduating class who have been accepted for post graduate work at a recognized university. Apply at Alumni Office.

The Loyola African Bursaries: (A) Number: Four. Value: Varies (includes full tuition, registration fee, room and board). Conditions: Awarded to qualified and deserving students from any country in Africa who intend to aid their homeland's development.
(B) Number: Six. Value: Varies (includes full tuition and registration fee). Conditions: Same as for Type (A).

The Loyola Bursary for the Blind: Number: One. Value: Full tuition for one year; renewable. Conditions: To a blind student who is qualified to follow regular courses.

The St. Patrick's Society Bursary: Number: One. Value: $200. Conditions: Awarded annually by the St. Patrick's Society of Montreal preferably to a Fourth Year student in any faculty who is Irish or of Irish extraction. Applications may be obtained at the Scholarship Committee's office. Closing date is December 20th.

The Touche, Ross, Bailey and Smart Bursary: Number: One. Value: $200. Conditions: "This bursary . . . will be awarded annually to a student who is completing his third year and will be entering his final year, majoring in Accountancy in the Faculty of Commerce, and who intends on graduation to pursue the qualification of Chartered Accountant. The award will be made on the basis of academic record, ability, personality and other suitable characteristics." The student to whom this bursary is awarded will be offered summer employment with the firm on completion of his third year of studies.

The Loyola Alumni Student Loan Fund:

Students who have previously attended Loyola College for a minimum of one year are eligible for financial assistance up to an amount equal to the current school year fees. The loan is repayable to the Association after graduation and at a low interest rate. Further details are available from the Alumni Office.

Commonwealth Scholarships

Under a Plan drawn up at a conference held in Oxford in 1959, each participating country of the Commonwealth offers a number of scholarships to students of other Commonwealth countries. These scholarships are mainly for graduate study and are tenable in the country making the offer. Awards are normally for two years and cover travelling, tuition fees, other university fees, and a living allowance. For details of the awards offered by the various countries consult the Registrar's office or write to The Canadian Universities Foundation, 77 Metcalfe Street, Ottawa, Ontario.

AWARDS

Governor-General's Medal: Presented by His Excellency the Governor-General of Canada to the student with the highest overall average in the four years of Arts.

Lieutenant-Governor's Silver Medal: Presented by His Honour the Lieutenant-Governor of the Province of Quebec to the student with the highest overall average in the four years of Science.

Lieutenant-Governor's Bronze Medal: Presented by His Honour the Lieutenant-Governor of the Province of Quebec to the student with the highest overall average in the four years of Commerce.

Loyola Advisory Board Gold Medal: Presented by the Loyola Advisory Board to the student with the highest overall average in the four years of Engineering.

The Loyola Medal: Presented by the Loyola College C.O.T.C. to the most representative Loyola student among the graduates.

The Philosophy Gold Medal Award: Presented by Loyola College to the outstanding student in Philosophy among the graduates, and awarded upon the recommendations of the Philosophy professors.

The Great Books Award: The Great Books of the Western World presented by the Encyclopaedia Britannica of Canada Limited to the student among the Engineering graduates who has the highest overall average in the humanities subjects in the four years.

The Great Books Award: The Great Books of the Western World presented by the Encyclopaedia Britannica of Canada Limited to the student among the Science graduates who has the highest overall average in the humanities subjects in the four years.

The Hamilton Watch Award: Presented by the Hamilton Watch Company to the student who has most successfully combined proficiency in Accounting with achievement, either academic, extra-curricular or a combination of both, in the social sciences or humanities.

The Hamilton Watch Award: Presented by the Hamilton Watch Company to the student who has most successfully combined proficiency in Mathematics with achievement, either academic, extra-curricular or a combination of both, in the social sciences or humanities.

The Society of Chemical Industry Merit Award: Presented by the Society of Chemical Industry to the highest ranking (minimum 75%) student in fourth year, majoring in Chemistry, Chemistry-Physics, or Chemistry-Mathematics, and who has completed the course in the normal number of years.

PRIZES

The William H. Atherton Prize: Donated by the late Dr. William H. Atherton, and to be awarded to the student outstanding for research in Canadian History.

The Isaiah S. Benjamin Prize for Mathematics: Donated by Dr. Isaiah S. Benjamin of Montreal to the Third Year student with the highest three-year average in Mathematics subjects.

The CAE Prize for Engineering: Donated by Canadian Aviation Electronics Limited to a graduating student with the highest four-year average in the Engineering subjects.

The Chemistry Prize: Granted by the College to the graduating student in Chemistry with the highest four-year average in Chemistry subjects.

The Economics Prize: Granted by the College to the graduating student in Arts or Commerce, taking a Major or an Honours in Economics, with the highest four-year average in Economics subjects.

The English Prize: Granted by the College to the graduating student in the Arts program, taking a Major or an Honours in English, with the highest four-year average in English subjects.

The German Language Prizes: Donated by the Consulate General of the Federal Republic of Germany to the Student who has shown the greatest progress in the German Language course offered at Loyola College.

The R. E. O'Connor Prize for Mathematics: Donated by Dr. Isaiah S. Benjamin of Montreal to the student graduating in Science or Engineering with the highest four-year average in Mathematics subjects.

The Physics Prize: Granted by the College to the graduating student in Physics with the highest four-year average in Physics subjects.

The Dr. Jacques Smith Memorial Prize: Donated by Dr. Kurt Ekler in memory of Dr. Jacques Smith, chief of surgery at the Hotel Dieu Hospital (St. Jerome) and a graduate of Loyola, who died suddenly in 1960 at the age of thirty-six. Awarded to the graduating student with the highest four-year aggregate standing in the Pre-Medical course (Science or Arts).

Note: The following prizes are also offered :-

The Canadian Celanese Prize for Chemistry: donated by Canadian Celanese Limited and awarded to the graduating student with the highest four-year average in Chemistry subjects.

The Canadian Celanese Prize for English: donated by Canadian Celanese Limited and awarded to the graduating student in the Arts program, taking a Major or an Honours in English, with the highest four-year average in English subjects.

The Frank Jarvis Prize for Political Science: donated by Mr. Frank Jarvis and to be awarded to the graduating student with the highest marks in Political Science in his fourth year.

The Mrs. Alfred Thibaudeau Prize for Political Science: donated by Miss Madeleine Thibaudeau in memory of her mother, Madame Alfred Thibaudeau, and to be awarded to the graduating student with the second highest average in the field of Political Science.

The Mrs. Renée Vautelet Prize for Political Science: donated by Mrs. René Vautelet and to be awarded to the graduating student with the highest average in the field of Political Science.

COURSES

Faculty of Arts

Students who enter the Faculty of Arts may follow the General course or the Honours program.

In the General course they may choose a field of concentration (major) in any one of the following: Biology-Chemistry (which meets pre-medical requirements), Classics, Economics, English, French, History, Philosophy, Political Science, Spanish, Theology. This program is of four years' duration and consists of twenty-two full courses, five at least of which must be in the field of concentration.

The Honours Program is designed for students who want a deeper and more extensive knowledge of their field of concentration and who wish to pursue post-graduate studies. The field of concentration is normally chosen at the end of the First Year. However, a particular field of concentration may dictate the electives to be taken in First Year. Throughout the Honours program students must maintain a yearly average of 65% and must not obtain less than 65% in any course in their field of concentration. Freshmen who enter with a 70% average and who wish to follow the Honours program, should consult with the Department of their choice during the period of academic counselling preceding Registration.

Faculty of Commerce

Students may choose to study for a Bachelor of Commerce in the four year general program with concentration in either Accounting, Business Administration or Economics. Qualified students may choose to study the Commerce Honours Economics program which is designed for those who wish to do further study in Economics after graduation. The Economics content of the Honours program is the same as the Arts program.

Those students who follow a major in Accounting, with good results, are exempted from the Intermediate Examinations of the Institute of Chartered Accountants of the Province of Quebec and are also exempt from three of the five years' apprenticeship required for the C.A. Certificate.

Faculty of Science

The General Science program leading to a Bachelor of Science is four years of study in a field of concentration (major) in one of Biology-Chemistry (which fulfils premedical requirements), Chemistry, Engineering (without certificate), Geotechnical Sciences, Mathematics, Physics. Applicants to this program must show better than average marks in science and mathematics.

The Honours Science program may be followed in Chemistry, Mathematics or Physics. The Honours Chemistry fulfils the requirements for professional membership in the Chemical Institute of Canada. Applicants for the Honours program must have at least a 70% average in their final high school examinations. Those who enter Honours Physics or Honours Mathematics must have successfully passed courses in Intermediate Algebra and Trigonometry. Throughout the Honours program students must maintain a yearly average of 65% and obtain not less than 65% in any course of their field of concentration. Freshmen who wish to follow an Honours program should consult with the Departments concerned at the sessions of academic counselling which precede Registration.

Engineering

A student may follow either a four year Bachelor of Science with Certificate program or a three year Certificate program. In either case the Certificate granted indicates that the student has completed three years of the standard five year program leading to a Bachelor of Engineering and that he has obtained marks of at least 60% in all Engineering, Science and Mathematics courses. The holder of a certificate is eligible to enter Engineering schools to complete the final two years of the Bachelor of Engineering.

Applicants to either program must show an aptitude in Mathematics and Science subjects, an average of at least 70% in their final High School results and must have completed courses in Intermediate Algebra and Trigonometry. At the end of the First year, students, in consultation with the Head of the Engineering Department, must choose whether they wish to follow the four year Bachelor of Science course or the three year course, and whether they will follow courses in Chemical, Civil, Electrical, Mechanical or Mining Engineering. Engineering Physics is also offered to students of exceptional ability.

†DESCRIPTION OF COURSES AND SUBJECTS

ACCOUNTING

L. M. Bessner........................(*Department Chairman*) *Assistant Professor*
R. L. McGraw..*Assistant Professor*
G. M. Bonder...*Lecturer*
A. J. Ferrari...*Lecturer*
L. Levi..*Lecturer*
J. H. McMahon...*Lecturer*
S. Sewell..*Lecturer*
E. Whitehall...*Lecturer*

101   Elements of Accounting.   Full Course.   G. Bonder, A. Ferrari,
R. L. McGraw, S. W. Sewell

Introduction to Books of Account and Financial Statements: theory of debit and credit; principles of double entry; books of original entry; recording of transactions through the general, sales, and purchase journals; special forms of cash book; controlling accounts; general ledger; accounts receivable and accounts payable ledgers; discounts, interest, prepaid and accrued charges; notes and bills of exchange; cheques, invoices, statements of account, bills of lading and other commercial papers; imprest system of petty cash; depreciation; provision for bad debts and discounts; inward and outward consignments; capital and revenue expenditures; bank reconciliations; voucher register; single entry; preparation of Trading and Profit and Loss Statements and Balance Sheets, single proprietorship; introduction to Work Sheet.

Lectures: 3 hours per week for two terms.

Text: Finney and Miller, *Principles of Accounting—Introductory.* (Prentice-Hall). (Can. Ed.).

202   Intermediate Accounting.   Full Course.   L. Levi, R. L. McGraw

Operating Statements and Balance Sheets with enlargement of Work Sheet Practice introduced in First Year.

Partnerships: Formation, the partnership agreement; classes of partners and of partnerships; rights, duties, and powers of partners; distribution of profits; admission and withdrawal of partners; partnership dissolution; sale of a partnership to a Corporation; default of a partner, goodwill.

Corporations - Legal Aspects: Formation and control; shareholders, directors; meetings; public and private companies; capital stock; limited liability; statutory books; auditors; dissolution. Accounting for Corporation taking over sole proprietor or partnership. Exchange of shares in Corporation for Assets in business selling out.

Manufacturing Accounts and Statements: Factory departments; elements of cost; materials and supplies; work in process and finished goods accounts; periodic and perpetual inventories.

Departmental Accounts: Distribution of charges to departments; comparison of department operations.

Depreciation: Causes of and accounting for depreciation.

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*NB: * beside a course means that the course will not be given in 1963-64.*
† The College reserves the right to cancel without notice any course here listed.

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Reserves and reserve funds.

Analysis and Interpretation of Financial Statements: Principles of valuation of current and fixed assets and liabilities; comparative balance sheets, ratios re working capital, share valuation, etc.

Single Entry and conversion to double entry.

Bonds and Debentures: Security payment of interest and principal; trust deed; issue and redemption; accounting for bond issue, interest and amortization.

Lectures: 4 hours per week for two terms.

Texts: Smails, *Accounting Principles.* (Ryerson). Finney and Miller, *Principles of Accounting—Intermediate.* (Prentice-Hall). (Can. Ed.).

303   Accounting and Auditing.   Full Course.   J. H. McMahon

Analysis and interpretation of financial statements; Statements of source and application of funds; Comparative ratios and share evaluation.

Introduction to auditing. Classification and scope of audits. Internal control. Legal and moral responsibilities of auditors with reference to court decisions. Fraud and error in accounts. Requirements of Dominion and Provincial Companies Acts. Audit certificate and reports. Programmes and working papers.

Lectures: 3 hours per week for two terms.

Texts: Finney and Miller, *Principles of Accounting—Intermediate* (Prentice Hall—Canadian 5th Edition).
Stettler, *Auditing Principles* (Prentice Hall).
Smails, *Auditing* (Ryerson).
Dominion and Quebec Companies Acts.
Bulletins of Canadian Institute of Chartered Accountants.

306   Accounting and Auditing (Advanced).   Full Course. E. G. Whitehall
(Formerly 304 and 305)

Joint ventures; Installment sales. Holding companies. Consolidations. Mergers. Amalgamations. Re-organization and reconstruction. Branch accounts and consignments including foreign entities.

Investigations: Nature and classes of business investigations. Requirements for prospectus; Sale of business by proprietors, partnerships and corporations with valuation of goodwill.

Lectures: 3 hours per week for two terms.

Texts: Karrenbrock and Simons, *Advanced Accounting* (Southwestern 3rd Edition).
Smails, *Accounting Principles* (Ryerson).

405   Cost Accounting, Estate Tax, Bankruptcy and
Income Tax.   Full Course.   L. M. Bessner

Cost Accounting: Terms and cost formulae; elements of cost; cost records, cost reports, estimating cost systems; standard costs; job costs; variances, cost ratios; differential and direct costing.

Budgetary Control: Preparation and control of the budget, variable expense budgets.

Executorships: Charge and discharge statements; capital and income; division of an estate; Estate tax and succession duties.

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Accounting

Bankruptcy and Liquidation Accounts: Receivers' accounts; priority of creditors; statement of affairs; deficiency account; realization and liquidation statement.

Income Tax: Individuals; proprietors; partners; corporations; general considerations.

Lectures: 3 hours per week for two terms.

Texts: Matz, Curry and Frank, *Cost Accounting*. (Gage 3rd Edition).
Karrenbrock and Simons, *Advanced Accounting*. (Southwestern 3rd Edition).
Gilmour, *Income Tax Handbook, 1962-63*.
Estate Tax Act. (Queen's Printer).
Canadian Bankruptcy Act. (Queen's Printer).

406 Advanced Auditing and Specialization. Full Course. L. M. Bessner

A continuation of Accounting and Auditing—306, with emphasis on Auditing problems. Commercial and Life Insurances including pension plans; Machine accounting; Investigations for frauds, etc. Report writing in detail including case methods in accounting.

Lectures: 2 hours per week for two terms.

Courses leading to a B.Comm. with a major in Accounting.

First Year: Accounting 101; Economics 102; English 101; French; Mathematics 101; Theology 101.

Second Year: Accounting 202; Business 201; Business 204; French; Mathematics 202 and 203; Philosophy 202.

Third Year: Accounting 303; Accounting 306; Philosophy 303; Theology; Economics, Business or Mathematics elective; English.

Fourth Year: Accounting 405; Auditing 406; Philosophy 404; Economics, Business, or Mathematics elective; Theology.

Students holding the Bachelor of Commerce degree with a major in Accounting from Loyola College are usually exempted from the Intermediate examinations of the Institute of Chartered Accountants of Quebec. They are also usually exempted from three of the five years of apprenticeship required for the C.A. certificate.

All other graduates of the College who wish to enter the profession of Accounting, but who have not followed the curriculum (as described above) for an Accounting Major, may do so by successfully completing a prescribed course of training which normally consists of three years of Evening Courses in Accounting, with at least two years of service in an approved office.

For additional information, please consult the Chairman of the Accounting Department.

BIOLOGY

Rev. S. Drummond, S.J.......................*(Department Chairman) Professor*

101 Fundamental Biology. Full Course.

A series of lectures and demonstrations designed to acquaint the general student with those fundamental principles of life which are the basis for an understanding of the structure and function of the living body.

Lectures: 2 hours per week for two terms.

102 Invertebrate Zoology. Full Course. S. Drummond

(a) Theory. The course begins with a study of scientific methodology and its application to the living sciences. The nature and characteristics of protoplasm are explained and these are correlated with a discussion of the cell as the unit of structure and function. These basic principles are then utilized in a detailed study of the phyla of the invertebrate animals.

Lectures: 2 hours per week for two terms.

Text: Storer and Usinger, *General Zoology*. (McGraw-Hill).

(b) Laboratory. A detailed study of representative animals of the invertebrate phyla. The first part offers intensive exercises in the use of the microscope and the interpretation of microscopic sections. The second half affords training in manual dexterity necessary for precise dissection.

Laboratory: 3 hours per week for two terms.

Text: Storer and Usinger, *General Zoology*. (McGraw-Hill).

104 Vertebrate Zoology Theory. Full Course. S. Drummond

The course opens with a study of the characteristics and classification of the vertebrates. The basic structure of the vertebrate body is outlined. Following this, the important type vertebrates are studied in detail, particular stress being laid on embryological development, structure and function.

Prerequisite: Biology 202a.

Lectures: 2 hours per week for two terms.

Text: Storer and Usinger, *General Zoology*. (McGraw-Hill).

105 Vertebrate Zoology Laboratory. Half Course. S. Drummond

The course comprises a detailed study of the structure of amphioxus, dogfish, frog and rabbit. The course is so conducted that, by training in exact dissection, observation and the preparation of carefully executed drawings, the student may be able to trace the main features of organization from the lower to the higher vertebrates.

Prerequisite: Biology 202b.

Laboratory: 6 hours per week for two terms.

Texts: Storer and Usinger, *General Zoology*. (McGraw-Hill).
Craigie-Bensley, *Practical Anatomy of the Rabbit*. (Univ. of Toronto Press).

Biology

406   Histology.   Half Course.   S. Drummond

(a) Theory. An introductory study of the cell, cell division and the general tissues. The course is designed to explain in detail the structure and function of the basic tissues and to introduce the various combinations of these in the special tissues of the adult body.

Lectures: 2 hours per week for one term.

(b) Laboratory. A series of exercises designed to introduce the student to the fundamentals of cytological and histological technique, and to illustrate, by means of prepared slides, mitosis, meiosis, as well as the microscopic characteristics of the basic types of histological tissues.

Laboratory: 3 hours per week for one term.

408   Genetics.   Half Course.   S. Drummond

(a) Theory. A series of lectures designed to explain the principles of heredity and variation.

Lectures: 2 hours per week for one term.

(b) Laboratory. A selection of experiments to demonstrate the methods and principles of genetics.

Laboratory: 3 hours per week for one term.

Course leading to a B.A. with Biology-Chemistry major.

First Year: English 101, French; Classics 102 or 121; Mathematics 101; Theology 101; One Elective.

Second Year: Biology 202; English; French; Classics 202 or 221 or 222; Philosophy 202; Theology.

Third Year: Biology 304 and 305; Chemistry 101; Philosophy 303; Physics 101, 102; Theology.

Fourth Year: Biology 406, 408; Chemistry 211, 212, 221, 222; Philosophy 404.

Course leading to a B.Sc. with a Biology-Chemistry major.

First Year: Chemistry 101, 102; English 101; French; Mathematics 106, 107, 108, 109; Physics 101, 102; Theology 101.

Second Year: Biology 202; Chemistry 211, 212, 221, 222; Philosophy 202; Theology.

Third Year: Biology 304, 305; Chemistry 323, 324; French; Philosophy 303; Theology.

Fourth Year: Biology 406, 408; Chemistry 425; English; Mathematics 202; Philosophy 404; A Social Science (full course).

BUSINESS

201   Commercial Law.   Full Course.   L. A. Saint-Pierre

Laws of contracts, sales, agency, partnership, company law, and negotiables instruments.

Lectures: 3 hours per week for two terms.

204   Economics of the Firm.   Full Course.   F. J. Hayes

This course is substantially the same as Economics 204.

Lectures: 3 hours per week for two terms.

301   Finance   Full Course.   L. A. Saint-Pierre

This course will deal with such aspects of financial management as financial planning, capital structure, investment management, refinancing, financial control.

Lectures: 3 hours per week for two terms.

401   Marketing.   Full Course.

This course will be devoted to such topics as market research, trends in marketing, marketing costs, product policy, pricing, sales organization, sales promotion, legislation affecting marketing.

Lectures: 3 hours per week for two terms.

411   Business Organization.   Full Course.   A. Vicas

This course will cover a number of topics in business organization and policy; the role of management, determination of objectives, policy-making, internal organization and control, the role of business in society, human relations in business, relations of business with government.

Lectures: 3 hours per week for two terms.

421   Managerial Economics.   Full Course.

This course will be concerned with the integration of economic theory with business practice in relation to the process of decision making and forward planning by management. The topics covered will include: the framework of management decision making, demand and cost analysis, forecasting methods, pricing policies and practices, competition and control, capital management.

Lectures: 3 hours per week for two terms.

Courses leading to a B.Comm. with a major in Business:

First Year: Economics 102; Accounting 101; English 101; Mathematics 101; French; Theology 101.

Second Year: Business 201; 204; Accounting 202; French; Mathematics 202, 203; Philosophy 202.

Third Year: Business elective; English; Philosophy 303; Theology; Economics or Accounting or Mathematics elective.

Fourth Year: Business elective; Business elective; Philosophy 404; Theology; Economics or Accounting or Mathematics elective.

Rev. A. Graham, S.J................(*Department Chairman*) *Associate Professor*
D. McElcheran...*Associate Professor*
K. Ekler..*Associate Professor*
T. Nogrady..*Associate Professor*
M. Doughty...*Assistant Professor*

101   General Chemistry.   Full Course.   K. Ekler

Foundation in the principles of Chemistry with emphasis on the kinetic and atomic theories, the structural basis of matter, the Periodic Table and elementary solution theory. The principles are applied in describing the more common inorganic substances and reactions. Extensive practice is given in chemical nomenclature, equation writing, and numerical problems.

Lectures: 3 hours per week for two terms.

Texts: Hutchison, *The Elements and their Reactions*. (Saunders, 1959).
         Schaum, *Theory and Problems for Students of College Chemistry*.

102   General Chemistry Laboratory.   Half Course.   M. Doughty

Taken in conjunction with Chemistry 101.

Text: King, *Semimicro Experiments in General Chemistry*. (Prentice-Hall).

211   Inorganic Qualitative Analysis.   Full Course.   K. Ekler

Nature of solutions, electrolytes, law of chemical equilibrium, ionization constants, solubility products, common ion effect, formation and dissolution of precipitates, equilibrium law applied to hydrolysis, amphoterism, complex ions and complex compounds.

Prerequisite: Chemistry 101.

Lectures: 2 hours per week for one term.

Laboratory: 3 hours per week for one term.

Text: Sorum, *Introduction to Semimicro Qualitative Chemical Analysis*. (Prentice-Hall).

212   Elementary Inorganic Quantitative Analysis. Full Course. K. Ekler

Theoretical aspects of precipitations in gravimetric and volumetric analysis, theory of indicators, acid-base titration, oxidation—reduction methods of analysis. Determination of ores by volumteric methods. Theory of precipitation and complex formation analysis.

Lectures: 2 hours per week for one term.

Laboratory: 6 hours per week for one term.

Text: Kolthoff and Sandell, *Quantitative Inorganic Analysis*. (Macmillan).

221   Organic Chemistry Theory.   Full Course.   A. Graham

Introductory course in nomenclature, type reactions and synthesis of aliphatic, alicyclic and aromatic hydrocarbons and their derivatives. Theoretical aspects including resonance, orbital theory and simpler reaction mechanisms are introduced.

Prerequisite: Chemistry 101.

Lectures: 3 hours per week for two terms.

Text: English and Cassidy, *Principles of Organic Chemistry*. (McGraw-Hill).

222   Organic Chemistry Laboratory.   Half Course.   A. Graham,
                                                               T. Nogrady

A systematic preparation of simpler organic compounds; the theory of fundamental techniques such as steam distillation, filtration, the determination of physical constants. To be taken in conjunction with Chemistry 221.

Prerequisite: Chemistry 102.

Laboratory: 3 hours per week for two terms.

Text: Cason and Rapoport, *Laboratory Text in Organic Chemistry*.

231   Introductory Physical Chemistry.   Full Course.   D. McElcheran

The principles of physical chemistry, based on elementary kinetic theory and thermodynamics. Includes the following topics: the gas state, first and second laws of Thermodynamics, liquid and solid states, solutions, homogeneous and heterogeneous equilibria, reaction kinetics, electrochemical phenomena. Problems form an integral part of the course.

Lectures: 3 hours per week for two terms.

313   Quantitative Inorganic Analysis (Adv.).   Full Course.   K. Ekler

A study of instrumental analytical methods. Electro-deposition, potentiometry, amperometry, absorption of radiation, gas analysis, ion exchange separations, polarography.

Prerequisite: Chemistry 211, 213.

Lectures: 1 hour per week for one term

Laboratory: 6 hours per week for one term.

Texts: Kolthoff and Laitinen, *pH and Electro Titration*. (Wiley).
             Ewing, *Instrumental Methods of Chemical Analysis*. (McGraw-Hill).
             Sandell, *Colorimetric Determination of Traces of Metals*. (Interscience).
             Reilley and Sawyer, *Experiments for Instrumental Methods*. (McGraw-Hill).

323   Organic Chemistry Theory.   Full Course.   T. Nogrady

Critical review and extension of aliphatic and aromatic reactions; more intensive study of reaction mechanisms, stereoisomerism, carbohydrates, problems of synthesis and identification.

Prerequisite: Chemistry 221.

Lectures: 2 hours per week for two terms.

Text: Brewster and McEwen, *Organic Chemistry*. 3rd. Ed. (Prentice-Hall).

324   Identification of Organic Compounds.   Full Course.   A. Graham

Theory and practice of organic qualitative analysis: Most of the laboratory time is given to the identification of unknown compounds and the separation and identification of a simple mixture.

>   Prerequisite: Chemistry 222.
>
>   Lectures: 1 hour per week for two terms.
>
>   Laboratory: 3 hours per week for two terms.
>
>   Text: McElwain, *The Characterization of Organic Compounds*. (Macmillan).

332   Advanced Physical Chemistry.   Full Course.   D. McElcheran

Selected topics: includes—structure of solid state, surface phenomena, the colloidal state, phase rule.

>   Prerequisite: Chemistry 231.
>
>   Lectures: 2 hours per week for two terms.

333   Physical Chemistry Laboratory.   D. McElcheran

To be taken in conjunction with Chemistry 332.

>   Laboratory: 4 hours per week (one afternoon) for two terms.
>
>   Text: Daniels, et al, *Experimental Physical Chemistry*. 5th Ed. (McGraw-Hill).

334   Thermodynamics.   Full Course.   D. McElcheran

A thorough study of classical thermodynamics. Considerable emphasis placed on physical as well as chemical application.

>   Prerequisite: Chemistry 231; Math. 205.
>
>   Lectures: 2 hours per week for two terms.

425   Organic Chemistry Theory.   Full Course.   A. Graham, T. Nogrady

Selected topics of organic chemistry, including terpenes, steroids, heterocyclic compounds, polymers and alkaloids. Reaction mechanisms and such stereochemical aspects as conformational analysis are treated extensively; the biological significance of many compounds is stressed.

>   Prerequisite: Chemistry 221, 323.
>
>   Lectures: 2 hours per week for two terms.

426   Organic Preparation Laboratory.   Full Course.   A. Graham, T. Nogrady

The student performs a varying series of more difficult preparations and is expected to become proficient in such techniques as vacuum distillation, catalytic hydrogenation and the manipulation of larger scale bench equipment. A sound knowledge of theory is required.

>   Prerequisite: Chemistry 222, 324.
>
>   Laboraotry: 6 hours per week for two terms.
>
>   Text: Vogel, *A text-book of Practical Chemistry*. (Longmans).

435   Advanced Physical Chemistry Laboratory.   Full Course.   D. McElcheran

A continuation of Chemistry 333, but fewer and more demanding experiments.

>   Prerequisite: Chemistry 333.
>
>   Laboratory: 4 hours per week for two terms.

436   Electrochemistry.   Half Course.   K. Ekler

Electrolytic conduction and electrolysis: Faraday's laws; specific and equivalent conductance and measurement of conductance; mobility and transport number; theory of strong electrolytes; thermodynamics of cells; electrode potentials; concentration cells; liquid junction potentials; overvoltage and polarization phenomena.

>   Prerequisite: Chemistry 322, 334.
>
>   Lectures: 2 hours per week for one term.

437   Kinetic Theory and Chemical Kinetics.   Full Course. D. McElcheran

The classical atomic theory. Kinetic theory of gases; the statistical mechanical approach to the Maxwell-Boltzman Distribution, Collision phenomena. Reaction Kinetics. The rate laws; Classical collision theory; Activated State Theory; Reaction Mechanisms; Free Radical chemistry; Chain processes.

>   Prerequisite: Chemistry 332, 334.
>
>   Lectures: 2 hours per week for two terms.

438   Quantum Chemistry.   Half Course.   D. McElcheran

The transition from classical to modern physics. Michelson-Morley experiment—Special theory of relativity, Planck's Black Body Radiation, Photoelectric effect, Radioactivity and the fundamental particles, The Rutherford-Bohr-atom, Schrodinger Wave Equation Atomic Spectra, Molecular structure and bonding.

>   Lectures: 2 hours per week for one term.

450   Senior Thesis.   Half Course.   Staff

The Department will make available to selected students a senior thesis in Organic or Physical Chemistry to be done in the second term.

Course for a B.Sc. in Honours Chemistry.

First Year: Chemistry 101, 102; English 101; French; Mathematics 106, 107, 108, 109; Physics 101, Theology 101.

Second Year: Chemistry 211, 212, 221, 222, 231; French; Mathematics 205, 206; Philosophy 202; Theology.

Third Year: Chemistry 313, 323, 324, 332, 333, 334; English; Mathematics 309; Philosophy 303; Physics 204, 205; Theology.

Fourth Year: Chemistry 425, 426, 435, 436, 437, 438; Philosophy 404; Physics 421.

Course for a B.Sc. Major in Chemistry.

First Year: This year is the same as in Honours Chemistry.

Second Year: Chemistry 211, 212, 221, 222; French; Mathematics 205, 206; Philosophy 202; Theology.

Third Year: Chemistry 231, 313, 323, 324; English; Philosophy 303; Theology.

Fourth Year: Chemistry 332, 333, 425, 426 and 334 or 437; Philosophy 404.

Mrs. E. Cran..........................(*acting Department Chairman*) *Lecturer*
J. E. Lempkowski...*Lecturer*
Mrs. B. Wardy...*Lecturer*

101 Elementary Latin. Full Course.

A course for students with no previous study in Latin, or with less than what is required for the Junior Matriculation paper in this subject.

(This course will be given only in the Extension division).

102 Latin Translation and Prose Composition. Full Course.

Prerequisite: Junior Matriculation Latin or Classics 101.

Lectures: 3 hours per week for two terms.

(a) Authors: Livy—*Book 21.*
              Selections (prose and poetry) from *Latin Reader* (Petrie)

(b) Practice: Training in the syntax of Latin grammar principally for the better comprehension of the authors, but also to develop some facility in Latin prose composition.

(c) Sight translation.

111 Elementary Greek. Full Course.

A course for those with no previous training in Greek.

Lectures: 3 hours per week for two terms.

112 Greek Translation and Prose Composition. Full Course. E. E. Cran

Prerequisite: Junior Matriculation Greek or Classics 111.

Lectures: 3 hours per week for two terms.

Texts: Homer—*Odyssey, Book 9.*
             Plato—*Apology of Socrates.*

121 Classics in Translation. Full Course.   E. E. Cran

The purpose of this course is to introduce students to the literature and history of Greece and Rome. The emphasis is on literature and such other aspects of cultural and political development as are necessary for an understanding of literature and significant for us today. Readings, which are in English, are chosen to illustrate the most typical literary forms of the periods studied, as well as to provide an introduction to some of the most important classical authors.

Texts: Homer, *The Odyssey.*
       Herodotus, *Selections.*
       Euripides, *Alcestis.*
       Plato, *Apology of Socrates*, Crito, *Euthypro.*
       Cicero, *Selections.*
       Virgil, *The Aeneid.*
       Selections from other Roman Authors.

202 Latin Translation and Prose Composition. Full Course.

(a) Authors: Cicero—*Pro Lege Manilia.*
              Horace—Selected *Satires.*

(b) Practice: More detailed study of Latin grammatical constructions and practice in writing more advanced Latin prose.

Prerequisite: Classics 102.

Lectures: 3 hours per week for two terms.

Text: P. Robertson, *Latin Prose Composition.* (Macmillan).

212 Greek Translation and Prose Composition. Full Course.

Prerequisite: Classics 112.

Lectures: 3 hours per week for two terms.

221 Classics in Translation—Ancient Drama. Full Course. E. E. Cran

Selected plays by Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus and Terence, together with other relevant works including:

Homer—*The Iliad.*
Aristotle—*Poetics.*
Horace—*The Art of Poetry.*

222 Classics in Translation

This course will be similar to Classics 221 but different authors and literary genres will be studied.

NB: Classics 121 is normally a prerequisite to Classics 221 and 222.

302 Latin Authors. Full Course.

Prerequisite: Classics 202.

Lectures: 3 hours per week for two terms.

312 Greek Authors. Full Course.

Prerequisite: Classics 212.

Lectures: 3 hours per week for two terms.

330 History of Ancient Greece and Rome. Full Course.

Lectures: 3 hours per week for two terms.

402 Latin Authors. Full Course.

Prerequisite: Classics 202.

Lectures: 3 hours per week for two terms.

Classics

412   Greek Authors.   Full Course.

   Prerequisite: Classics 212.

   Lectures: 3 hours per week for two terms.

The requirement in Classics for Arts students may be fulfilled in the following ways:

(a) Classics 101, 102, 202⎫   For those who wish to begin the study of Latin or
(b) Classics 111, 112, 212⎭   Greek in College.
(c) Classics 102, 202.
(d) Classics 112, 212.
(e) Classics 121, 221 or 222.
(f) Classics 102 or 112, 121.

Normally the courses in these sequences are taken in successive years, but this need not be the case with sequence (e).

Note: All students of Classics are required to provide themselves with a dictionary.

Course leading to a General B.A. with the major in Classics (Latin or Greek).

First Year   Classics 102 or 112; English 101; French; Mathematics 101; Theology 101; one elective (preferably Classics 121).

Second Year: Classics 202 or 212 and one from Classics 202, 121, 212, 221; English; French; Philosophy 202; Theology.

Third Year: Classics 302 or 402 and two from Classics 121, 212, 221, 312, 330, 430; Philosophy 303; Theology; one elective.

Fourth Year: Classics 302 or 402 and two from Classics 121, 212, 221, 312, 330, 412; Philosophy 404; one Social Science elective.

ECONOMICS

F. J. Hayes........................(*Department Chairman*) *Associate Professor*
S. A. Alvi..*Assistant Professor*
A. G. Lallier..*Assistant Professor*
N. G. Pillai...*Assistant Professor*
L. Simcoe...*Assistant Professor*
A. Vicas..*Assistant Professor*
G. Winter...*Assistant Professor*
M. G. Kelly...*Lecturer*

102   Principles of Economics.   Full Course.   Staff

A survey of the existing economic order, with particular emphasis on the salient characteristics of the North American Economy. Concentration is on explaining and evaluating the operation of the price system as it regulates production, distribution, and consumption, and as it in turn is modified and influenced by private organization and government policy. Consideration is also given to the determination of aggregate economic activity. The main areas studied include: the monetary and banking systems in the United States and Canada; the composition and fluctuations of national income; and the major conditions of economic growth; all as influenced by monetary, fiscal, and other policies.

   Lectures: 3 hours per week for two terms.

204   Economics of the Firm.   Full Course.   M. G. Kelly, A. Vicas

In this course consideration will be given to such topics as: theory and measurement of demand; demand forecasts; production functions; cost analysis; price and output policy under various market conditions; factor pricing.

   Lectures: 3 hours per week for two terms.

301   Economic History.   Full Course.   A. G. Lallier

An analysis of the development of Western Europe, Canada, and the United States.

   Lectures: 3 hours per week for two terms.

302   Theories and Processes of Economic Growth and Development. Full Course.   N. Pillai

A consideration of various contributions by economists and others to an understanding of how societies grow and undergo institutional change. The course also includes a study of the problem of accelerating economic growth, with emphasis on selected developing nations of the present time, an analysis of the process of capital formation, the role of the state (in different politico-economic systems), the role of external assistance in economic development, and the economics of investment decisions. Emphasis is also given to the interaction of cultural change and economic development.

   Lectures: 3 hours per week for two terms.

305   Money, Banking, and Income Theory.   Full Course.   L. Simcoe

The functions of money; money and prices; the evolution and kinds of money; the value of money; the supply of money; monetary and banking developments in Canada, the United States and the United Kingdom; the determinants of national income; the multiplier and acceleration principles; monetary and fiscal policy.

   Lectures: 3 hours per week for two terms.

306 Labour Economics. Full Course.

History of the labour movement in Europe, Canada and the U.S.; labour problems; the economics of labour; collective bargaining; case studies; the social teaching of the Church; labour legislation in England, Canada and the United States.

Lectures: 3 hour per week for two terms.

308 Applied Statistics. Half Course.　　　　F. J. Hayes

The application of statistical methods to economic problems including curve fitting, trend lines, seasonal variation, the measurement of cyclical fluctuations, correlation and index numbers.

Lectures: 3 hours per week for First Term.

310 History of Economic Thought. Full Course. (Honours).　A. Vicas

A critical review of economic thought since Plato and Aristotle.

Lectures: 3 hours per week for two terms.

312 Comparative Economic Systems. Full Course.　　A. G. Lallier

The evolution of economic systems is discussed and evaluated in terms of modern economic theory, and from the point of view of economic efficiency and development.

Lectures: 3 hours per week for two terms.

313 Economic Fluctuations. Full Course.　　　　F. J. Hayes

Statistical aspects of the business cycle, the Kitchin, Juglar and Kondratieff cycles; monetary, overinvestment, and underconsumption theories of the cycle; Schumpeter's theory; the influence of some strategic factors; an eclectic theory of the cycle; policy.

Lectures: 3 hours per week for two terms.

317 Mathematical Economics. Full Course. (Honours)　　A. Vicas

Application of elementary mathematical techniques to economic analysis. Topics covered will include the Calculus, Theory of Determinants, Linear Programming, etc., and their applications to selected topics in economic theory.

Lectures: 3 hours per week for two terms.

319 Economic Geography. Full Course.

This course will be devoted to an examination of the influence which geographical factors have had and continue to have on economic activity.

Lectures: 3 hours per week for two terms.

407 International Trade. Full Course.　　　　S. A. Alvi

Historical and economic background of international trade; the theory of international trade; balance of payments; international capital movements; foreign exchange; international commercial policies; internatioal organizations dealing with commercial policy.

Lectures: 3 hours per week for two terms.

411 Macro-Economic Analysis. Full Course. (Honours).　F. J. Hayes

A critical study of selected topics in Aggregative Economic Analysis.

Lectures: 3 hours per week for two terms.

415 Public Finance. Full Course.　　　　L. Simcoe

A study of the principles and practices of public finance, with special reference to Canada.

Lectures: 3 hours per week for two terms.

416 Economic Policy. Full Course.　　　　L. Simcoe

This course will be devoted to an examination of economic policy in such areas as business, agriculture, commerce, income redistribution, transportation, social security.

Lectures: 3 hours per week for two terms.

Courses leading to a B.A. with a major in Economics.

First Year:　Economics 102; English 101; French; Classics 102 or 121 Theology 101; Mathematics 101.

Second Year: Economics 204; English; French; Classics 202 or 221 or 222; Philosophy 202; Theology.

Third Year:　Economics 305, 308; Mathematics 202; Philosophy 303; Theology; History or Political Science or Mathematics elective.

Fourth Year: Economics elective; Economics elective; Philosophy 404; Philosophy elective; History or Political Science or Mathematics elective.

Courses leading to a B.Comm. with a major in Economics.

First Year:　Economics 102; Accounting 101; English 101; Theology 101; French; Mathematics 101.

Second Year: Economics 204; 308; Accounting 201 Business 201; French; Mathematics 202; Philosophy 202.

Third Year:　Economics 305; English; Philosophy; Theology; Business or Accounting or Mathematics elective.

Fourth Year: Economics elective; Economics elective; Philosophy 404; Theology; Business or Accounting or Mathematics elective.

Courses leading to an Honours B.A. in Economics.

First Year:　Economics 102; English 101; Classics 102 or 121; Mathematics 101; Theology 101; French.

Second Year: Economics 204, 308; French; Classics 202 or 221 or 222; Philosophy 202; Mathematics 202; History or Political Science or Mathematics elective.

Third Year:　Economics 305, 310; Economics elective; Theology; Philosophy 303; History or Political Science or Mathematics elective.

Fourth Year: Economics 411; Economics elective; Economics elective; Philosophy 404; Theology.

Courses leading to an Honours B.Comm. in Economics.

First Year:　Economics 102; Accounting 101; English 101; French; Mathematics 101; Theology 101.

Second Year: Economics 204, 308; Business 201; French; Mathematics 202; Philosophy 202; Accounting or Business or Mathematics elective.

Third Year:　Economics 305, 310; Economics elective; Theology; Philosophy 303; Accounting or Business or Mathematics elective.

Fourth Year: Economics 411; Economics elective; Economics elective; Philosophy 404; Theology.

F. Guadagni...*Associate Professor*
D. J. McDougall.............(*Acting Department Chairman*) *Associate Professor*
K. I. Krakow...*Assistant Professor*
S. Yalcin..*Assistant Professor*
A. B. Hurtubise...*Lecturer*
Rev. H. Wardell, S. J...*Instructor*

100   Engineering Mathematics.   Half Course.   F. Guadagni

This course is designed for first year engineering students who have a credit in Intermediate Trigonometry. It consists primarily of problems based on the logarithmic solutions of oblique triangles both in one plane and in more than one plane. It also includes general values, inverse functions, properties of triangles and polygons.

Lectures: 1 hour per week for two terms.

101   Engineering Mathematics.   Half Course.   F. Guadagni

This is the second term course and is designed for those engineering students who have taken trigonometry in the first term. This course stresses logarithms and problems based on the solution of oblique triangles in one plane only.

Lectures: 1 hour per week for Second Term.

120   Elements of Mechanical Drawing.   Full Course.   H. Wardell

Selection and use of drafting instruments and materials; lettering, conventional practices and symbols, sectional views and methods of reproduction; orthographic projection auxiliary and oblique views, dimensioning, sectioning.

Laboratory: 3 hours per week for two terms.

Text: French, *Engineering Drawing*. (McGraw-Hill).

160   Elements of Engineering Practice.   Staff

A series of lectures designed to acquaint the First Year students with the basic concepts, practice and history of Engineering.

200   Engineering Mathematics.   Half Course.   F. Guadagni

The slide rule, its use and limitations. Problems primarily designed to afford practice in the use of the slide rule.

Lectures: 1 hour per week for First Term.

210   Statics and Dynamics.   Full Course   F. Guadagni

Equilibrium of concurrent and non-concurrent forces; simple beams and frame-work with stress analysis by the methods of sections. Elementary dynamics of

particles; rectilinear motion; projectiles; the inclined plane and pulleys; impulse, impact and momentum of streams of particles; work energy; centre of gravity; friction.

Lectures: 2 hours per week for two terms.

Text: *Mimeographed problems.*

Reference Books: Higdon and Stiles, *Engineering Mechanics*. (Prentice-Hall).
Timoshenko and Young, *Engineering Mechanics*. (Mc-Graw-Hill).

220   Mechanical Drawing.   Full Course.   H. Wardell

Geometrical construction of ellipses, hyperbolas, cycloids, involutes, etc. Pictorial drawings including isometric, oblique, common machines elements: screws, welding, piping, gears, pulleys and structural shapes; free-hand sketching, work and assembly drawings.

Lecture: 1 hour per week for two terms.

Laboratory: 2 hours per week for two terms.

Text: French, *Engineering Drawing*. (McGraw-Hill).

221   Descriptive Geometry.   Half Course.   F. Guadagni

Theory of orthographic projection, planes and their traces, oblique planes solution dihedral angles and practical mining problems involving principles covered in the course.

One hour lecture, two hours Lab. per week for two terms.

Text: *Mimeographed notes.*

222   Graphical Statics.   Half Course.   F. Guadagni

Lectures: 1 hour per week for Second Term.

230   Elements of Surveying.   Half Course.   S. Yalcin

Kinds of surveying operations: the chain, the tape and their use. The engineer's level; differential and profile leveling. The engineer's compass, its use; local attraction in magnetic surveys. The transit and transit traverses; stadia: circular curves; calculation of areas by the method of total coordinates.

Lectures: 2 hours per week for Second Term.

Reference Books: Davis and Foote, *Surveying*. (McGraw-Hill).
Breed, *Surveying*. (Wiley).

240   Elements of Engineering Materials.   Half Course.   S. Yalcin

Fundamental structure, properties and physical behavior of materials. Stability use and control of properties. Alloy theory and metallic phases. Production, properties, uses and protection of ferrous and non-ferrous metals and alloys. Effects of hot and cold working. Properties of non-metallic materials: wood, cementing materials, concrete, soils, plastics, rubber, fuels.

Lectures: 2 hours per week for two terms.

Text: Bacha, Schwalje, Del Mastro *Elements of Engineering Materials*. (Harper).

260 Engineering reports. Half Course. G. MacGuigan, D. J. McDougall
(See Page 77)

300 Engineering Mathematics. Half Course. F. Guadagni

A selection of exercises and problems requiring analysis and the application of accepted or derived methods of solution.

Lectures: 1 hour per week for two terms.
Laboratory: 2 hours per week for two terms.
Text: *Mimeographed problems.*

301 Engineering Mathematics. Half Course. F. Guadagni

Application of physical and chemical principles to some fundamental problems in Chemical Engineering.

Lectures: 1 hour per week for two terms.

310 Mechanics. Full Course. F. Guadagni

Shearing force and bending moments; kinematics, dynamics and statics of systems of particle and of rigid bodies. Variable rectilinear and curvilinear motion. Simple harmonic motion; moments of inertia and translation and rotation of rigid bodies. Impact. Conservation of angular momentum. Gyroscopes.

Lectures: 3 hours per week for two terms.
Text: *Mimeographed problems.*
Reference Books: Higdon and Stiles, *Engineering Mechanics.* (Prentice-Hall).
Timoshenko and Young, *Engineering Mechanics.* (McGraw-Hill).

311 Mechanics. Full Course. F. Guadagni

Shearing force and bending moment. Kinematics, dynamics and statics of systems of particles and of rigid bodies. Variable rectilinear and curvilinear motion. Simple harmonic motion. Moments of inertia and center of pressure. Engineering 311 and 410 are together equivalent to Engineering 310.

Lectures: 2 hours per week for two terms.
Text: *Mimeographed problems.*
Reference Books: See Eng. 310.

312 Mechanics of Machines. Half Course. F. Guadagni

Constrained motion; instant centers; centrodes; analysis and classification of simple mechanisms, including the quadric-crank, the slider-crank and wheel trains; design of involute gear teeth; belts and flexible couplings; cam design.

Lectures: 2 hours per week for Second Term.
Laboratory: 2 hours per week for Second Term.

320 Machine Drawing. Half Course. K. Krakow

Engineering drafting room procedure and technique in the production of working drawings of machinery, correlation between processes and design.

Laboratory: 3 hours per week for First Term.
Text: French, *Engineering Drawing.* (McGraw-Hill).

330 Surveying. Half Course. S. Yalcin

Adjustment of level and transit; theory and use of the polar planimeter; double meridian distance method of calculating areas; omitted measurements and partition of land; cross section and borrow pits; circular curves and spirals; vertical curves.

Lectures: 2 hours per week for First Term.

Reference Books: Davis and Foote, *Surveying.* (McGraw-Hill).
Breed, *Surveying.* (Wiley).

331 Surveying Problems. Half Course. S. Yalcin

Earthworks calculations using the polar planimeter.

Laboratory: 3 hours per week for First Term.

332 Elementary Surveying Field Work. S. Yalcin

Practice in chaining and taping; use of the level and of the transit; complete survey of a tract of land.

Summer School: Four weeks in April and May, after Engineering 230.

340 Engineering Materials. Half Course. S. Yalcin, K. Krakow
H. Wardel

Review of ferrous and non-ferrous metallurgy; Theory and practice of heat treatment and deformation of metals; use of furnaces and testing equipment; macroscopic and microscopic inspection.

Lectures: 1 hour per week for First Term.

Laboratory: 3 hours per week for First Term.

341 Strength of Materials. Full Course S. Yalcin

Elastic theory of matter; axial, thermal and bending stresses; combined stress; tension; deflection of beams by differential equation of elastic line, moment area, superposition and conjugate beam methods; statically indeterminate beams; energy of strain; introduction to photostress analysis and theory of models.

Lectures: 2 hours per week for two terms.

Laboratory: 3 hours per week for Second Term.

Reference Book: Timoshenko and Young, *Elements of Strength of Materials.* (Van Nostrand).

342 Mechanical Engineering. Full Course. K. Krakow

Thermodynamics of mechanical engineering processes; steam power; I-C engines; compressors; fundamentals of refrigeration and psychrometrics; heat transfer; fluid mechanics.

Lectures: 2 hours per week for two terms.

Reference Books: Ebaugh, *Engineering Thermodynamics.* (Van Nostrand).
Severn, Miles and Degler, *Steam, Air and Gas Power.* (Wiley).

343   Mechanical Engineering Laboratory.   Half Course.   K. Krakow

Measurement of technical performance of machines: boilers; I-C engines; steam engines; gas and steam turbines; compressors; fans; fuel analysis; heat transfer.

Laboratory: 3 hours per week for two terms.

344   Circuit Analysis.   Full Course.   A. Hurtubise

The fundamentals of the analysis of linear circuits to steady, time varying, periodic and non-periodic circuits and voltages; general analysis, network theorems, active network analysis, time frequency domain relationships, polyphase circuits, Fourier series, Laplace transforms.

Lectures: 2 hours per week for two terms.
Laboratory: 3 hours per week for Second Term.
Reference Book: Walsh and Millar, *Electric Circuits*. (McGraw-Hill).

345   Circuit Analysis.   Half Course.   A. Hurtubise

Modified form of Engineering 344, given in one term.
Lectures: 2 hours per week for Second Term.
Laboratory: 3 hours per week for Second Term.
Reference Book: Walsh and Millar, *Electric Circuits*. (McGraw-Hill).

360   Technical Report.

Students entering the final year of the Engineering course must submit a technical report. The most suitable subject for the report is a topic drawn from the experience of the student during his summer work, but a similar topic connected with any engineering, scientific or industrial work with which he is familiar is acceptable. The report should be approximately 2,000 words in length and must be handed in not later than October 3rd.

361   Engineering Practice.   Half Course.

410   Mechanics.   Half Course.   F. Guadagni

Translation and rotation of rigid bodies. Impact. Conservation of angular momentum; Gyroscopes. Engineering 311 and 410 are together equivalent to Engineering 310.

Lectures: 2 hours per week for First Term.
Text: *Mimeographed problems.*
Reference Books: see Eng. 310.

430   Surveying Field School (McGill Engineering 377).

Preliminary railway or highway survey with transit, profile and topographic parties; plane table, hand level and stadia; spiral curves; cross sections; simple triangulation networks; reciprocal levelling; soundings; current meter surveys; introduction to mine surveying; small geological survey with Brunton compass and chain; astronomical observations.

Summer School: Four weeks in April and May for students proceeding to the fourth year of Civil Engineering at McGill. Mining and Geophysical Engineering students take the first two weeks of this course.

440   Mechanical Engineering Summer School.

A course in Mechanical Drawing and Machine Shop work taken at McGill by students proceeding to the fourth year of Mechanical Engineering at McGill.

Summer School: Four weeks in September following graduation.

441   Engineering Laboratory.   Half Course.   Staff

Directed engineering projects normally done in Fourth Year but with permission may be initiated in Third Year.

Special Regulations for Engineering.

For students entering the first year of Engineering, the Junior matriculation transcript must include English, French, Elementary Algebra, and one of the following: Physics, Chemistry or Trigonometry. An average of at least 70% is required with high standing in mathematics and science subjects. Those students entering with Intermediate Algebra will take Engineering Mathematics 101 in place of Mathematics 108.

For students entering the second year with Senior matriculation, the transcript must include a total of ten papers including English, French, Physics, Chemistry, Senior Algebra, Analytical Geometry and Trigonometry (if not already a constituent subject of the Junior certificate). Above-average marks in Mathematics and Science subjects are required. Students entering at the second-year level will be expected to take Engineering 120 and 220 concurrently.

Effective for academic year 1964-65: The Junior Matriculation transcript must include Intermediate Algebra and Trigonometry and the Senior Matriculation transcript must include Calculus.

The College offers a four-year course leading to a B.Sc. with an Engineering Certificate and a three-year non-degree course leading to the Engineering Certificate. Holders of the Certificate in Engineering are eligible to enter the second to last year of the B.Eng. program at McGill University and a number of other Canadian Universities. Options are offered in the following branches of Engineering: Chemical Engineering, Civil Engineering, Electrical Engineering, Engineering Physics, Mechanical Engineering and Mining and Geophysical Engineering. The Freshman year is common to all Engineering students. At the start of the Sophomore year the student will elect to follow either the four-year or three-year program and at the start of the Junior year the student will elect to follow the option in the branch of Engineering of his choice.

Students registered in the three-year program may be permitted to transfer to the four-year program at the start of the Junior year but cannot transfer at the start of the Senior year until they have completed all the prerequisites for the fourth year of the four-year course.

Candidates for the Engineering Certificate must have 60% in each Engineering and Science subject and at least 50% in the others. Any student registered in the final year of either the four-year or three-year program who has a deficiency in the requirements for the Engineering Certificate must make up this deficiency at the first session of supplemental examinations following the end of their final term; otherwise the certificate cannot be granted.

First Year Engineering:

Common Courses:

Engineering: Engineering 100 (or 101), 120, 160.
Science: Chemistry 101, 102; Mathematics 106, 107, 108, 109; Physics 101, 102.
Humanities: English 101; French; Theology 101.

Second Year Engineering:

Common Courses:

Engineering: Engineering 200, 210, 221, 222, 260.
Science:　　　Chemistry 231; Mathematics 205, 206; Physics 205.
Humanities: Theology.

B.Sc. with Certificate Option:
Humanities: Philosophy 202.

Three-Year Certificate Option:

Engineering: Engineering 220, 230, 240, 332 (Field School).
Science:　　　Mathematics 307.
Humanities: Philosophy 201.

Third Year Engineering—B.Sc. with Certificate Option:

Common Courses:

Engineering: Engineering 220, 230, 240, 311, 332 (Field School).
Science:　　　Geotechnical Science 301 (except Chem. and Eng. Phys.);
　　　　　　　Mathematics 307, Physics 401, 304.
Humanities: French (except Eng. Phys.); Philosophy 303; Theology.

Chemical Engineering and Mining and Geophysical Engineering Options:
Science:　　　Chemistry 211, 212.

Engineering Physics Option:
Science:　　　Mathematics 208, 309.

Third Year Engineering—Three Year Certificate Option:

Common Courses:

Engineering: Engineering 310, 360.
Science:　　　Geotechnical Science 301 (except Chem., Mech, Eng. Phy.);
　　　　　　　Mathematics 308, 309; Physics 401, 205, 303b, 304.
Humanities: Theology.

Chemical Engineering Option:

Engineering: Engineering 301, 340, 345.
Science:　　　Chemistry 211, 212, 221, 222; Physics 302.

Civil Engineering Option:

Engineering: Engineering 312, 330, 331, 340, 341, 345, 430 (Field School).

Electrical Engineering Option:

Engineering: Engineering 342, 343, 344.
Science:　　　Physics 406 (first term).

Engineering Physics Option:

Engineering: Engineering 344, 361.
Science:　　　Mathematics 311; Physics 310, 401, 406 (first term).

Mechanical Engineering Option:

Engineering: Engineering 300, 312, 320, 340, 341, 345, 440 (Summer School)

Mining and Geophysical Engineering Option:

Engineering: Engineering 330, 345, 430 (Field School—1st Half).
Science:　　　Chemistry 211, 212; Geotechnical Science 302, 303, 304 (Field.
　　　　　　　School).

Fourth Year Engineering—B.Sc. with Certificate Option:

Common Courses:

Engineering: Engineering 360, 410.
Science:　　　Mathematics 308, 309 (except Eng. Phy.).
Humanities: English; Philosophy 404; Theology.

Chemical Engineering Option:

Engineering: Engineering 301, 340, 341 (optional), 345.
Science:　　　Chemistry 221, 222, 313; Physics 302.

Civil Engineering Option:

Engineering: Engineering 312, 330, 331, 340, 341, 345, 430 (Field School).
Science:　　　Geotechnical Science 401, 402; Mathematics 309.

Electrical Engineering Option:

Engineering: Engineering 341 (optional), 342, 343, 344.
Science:　　　Physics 406 (first term).

Engineering Physics Option:

Engineering: Engineering, 344, 361.
Science:　　　Mathematics 311; Physics 310, 401, 402.

Mechanical Engineering Option:

Engineering: Engineering 300, 312, 320, 340, 341, 345, 440 (Summer School).
Science:　　　Mathematics 309.

Mining and Geophysical Engineering Option:

Engineering: Engineering 330, 340, 341 (optional), 345, 430 (Field School—
　　　　　　　1st Half.
Science:　　　Geotechnical Science 302, 303, 304 (Field School), 401, 402
　　　　　　　(or option in Geotech. Sc.).

A. G. Hooper..*Professor*
Rev. G. MacGuigan...............(*Department Chairman*) *Associate Professor*
J. Buell...*Associate Professor*
M. Blanar...*Assistant Professor*
J. Rooney...*Assistant Professor*
R. Wareham...*Assistant Professor*
K. Waters...*Assistant Professor*
J. M. Keyes..*Lecturer*

101 First Year. Full Course.   M. Blanar, J. Buell, R. Wareham

English literature from the beginnings to the 17th century. Four written assignments.

Lectures: 3 hours per week for two terms.

Texts: Selected paperbacks.

105 First Year. Half Course.   G. MacGuigan

Logic and Language: A course for first year Arts students designed to reveal the fundamentals of prose style and secure clarity of thought and expression. It includes the levels of English usage, the levels of meaning, feeling and thinking, the techniques of analysis and inquiry, and the syllogistic reasoning of formal logic.

Lectures: 2 hours per week for two terms.

Texts: Beardsley: *Practical Logic.*
Strunk-White: *The Elements of Style.*
Robertson: *Errors in Composition.*
Borden: *Speaking as the Listener Likes It.*

106 First Year. Half Course.   G. MacGuigan

Introduction to Literature (Arts Students): Reading and discussion of the following books:

Newman: *The Uses of Knowledge*.....ed. Ward (from *The Idea*).
Ruskin: *As Literary Critic*......ed. Ball.
Mill: *Autobiography.*
Wordsworth: *The Prelude.*
Woodham-Smith: *Florence Nightinglae.*
Cobbett: *Rural Rides* (selections).
Wilde: *The Critic as Artist.*
Wilde: *The Soul of Man under Socialism.*
Wilde: *The Picture of Dorian Gray.*
Eliot: *Adam Bede.*
Shaw: *Saint Joan.*
The Nineteenth Century (Selections) ed. Goodwin.

Lectures: 2 hours per week for two terms.

110 Chaucer. Full Course.   A. G. Hooper

An elective course for honours students. Includes English 430.

Lectures: 3 hours per week for one term.

120 Spenser and his Background. Full Course.   R. Wareham

An obligatory course for fourth year honours students.

Spenser's works, in particular *The Shepheardes Calender* and *The Faerie Queene*; the background of Elizabethan politics, religion, ethics, psychology, and literary theory; the influence of Courtly Love, Humanism, and Neoplatonism; the traditions of pastoral, epic, romance, and allegory.

Lectures: 3 hours per week for two terms.

130 Shakespeare. Full Course.   J. Buell

An obligatory course for fourth year honours students. The comedies, tragedies and historical plays of Shakespeare, with due attention given to his times, his development, and the body of Shakespearean criticism.

Lectures: 3 hours per week for two terms.

140 Milton and the 17th Century. Full Course.   A. G. Hooper

An obligatory course for third year honours students.

Lectures: 3 hours per week for two terms.

150 Dryden and Pope. Full Course.   M. Blanar.

An obligatory course for fourth year honours students.

Lectures: 3 hours per week for one term.

160 Swift and Johnson. Full Course.   M. Blanar

An elective course for honours students.

Lectures: 3 hours per week for two terms.

220 Medieval and Renaissance Literature. Full Course.   A. G. Hooper

A course for general Arts students.

Lectures: 3 hours per week for two terms.

240 Restoration and 18th-Century Literature. Full Course. M. Blanar

A course for general Arts students.

Lectures: 3 hours per week for two terms.

250 19th Century Poetry. Full Course.   J. Rooney

An obligatory course for third year honours students.

Lectures: 3 hours per week for two terms.

260 19th Century Thought. Full Course.   J. Rooney

An elective course for honours students. A critical study of key political, moral, spiritual and literary concepts in selected works of Jane Austen, Wordsworth, Mill, Newman, Arnold, George Eliot and others.

Lectures: 3 hours per week for two terms.

270 19th Century Literature. Full Course. J. Rooney

A course for general Arts students.

Lectures: 3 hours per week for two terms.

280 Modern Literature. Full Course. K. Waters

An elective course for honours students.

Lectures: 3 hours per week for two terms.

290 Modern Literature. Full Course. K. Waters

An elective course for general Arts students.

Lectures: 3 hours per week for two terms.

320 Drama in the Western World. Full Course J. Buell

A course for general Arts students.

Lectures: 3 hours per week for two terms.

330 Elizabethan and Jacobean Drama. Full Course. A. G. Hooper

An obligatory course for second year English major students.

Lectures: 3 hours per week for two terms.

340 The Novel. Full Course. J. Buell

An elective course for honours students.

Lectures: 3 hours per week for two terms.

350 Modern Fictional Forms. Full Course. J. Buell

A course for general Arts students.

Lectures: 3 hours per week for two terms.

360 Poetry. Full Course. K. Waters

An obligatory course for second year honours students.

Lectures: 3 hours per week for two terms.

370 Literature, Ideas and Myths. Full Course. R. Wareham

A course for general Arts students.

Texts: *The Epic of Gilgamesh.*
The Prophecy of Isaias.
The Republic of Plato.
Virgil, *The Aeneid.*
Augustine, *The City of God.*
Boethius, *The Consolation of Philosophy.*
The Romance of Tristan and Iseult.
Shakespeare, *King Lear.*
Marvell's poetry.
Swift, *Gulliver's Travels.*
Dostoyevsky, *Crime and Punishment.*
The Communist Manifesto.

Lectures: 3 hours per week for two terms.

380 Literary Genres. Full Course. R. Wareham

A course for general Arts students.

An attempt to arrive at definitions of some of the *kinds* of literature, such as *comedy* and *tragedy*, by means of a comparative study of a large number of representative works.

Lectures: 3 hours per week for two terms.

410 The English Language. Half Course. A. G. Hooper

An elective course for honours students.

Lectures: 2 hours per week for one term.

420 Anglo-Saxon Language and Literature. Half Course. A. G. Hooper

An elective course for honours students.

Lectures: 2 hours per week for two terms.

430 Middle English Language. Half Course. A. G. Hooper

An elective course for honours students. Incorporated into English 110.

Lectures: 3 hours per week for one term.

440 Advanced Prose Composition. Full Course. G. MacGuigan

An elective course for general Arts students; a theoretical and practical study of prose style to make the student familiar with and competent in the use of the main prose traditions. A reading of treatises on style from Aristotle and Longinus to the present time is required.

Lectures: 3 hours per week for two terms.

Texts: (some) Aristotle: *Rhetoric.*
Weaver: *The Ethics of Rhetoric.*
Auerbach: *Mimesis.*
Whately: *Elements of Rhetoric.*
Donnelly: *Persuasive Speech.*
Read: *English Prose Style.*
Whitehall: *Structural Elements of English.*

Engineering 260 Report Writing. G. MacGuigan, D. J. McDougall

A course for second year Science and Engineering students.

Lectures: 2 hours per week for two terms.

510 Principles and Practice of Literature. Full Course. J. M. Keyes

A course for all general Arts students of second year designed to acquaint the student with the nature of Literature, its various genres, its levels, and basic critical positions and problems.

Lectures: 3 hours per week for two terms.

Texts: (some) Aristotle: *Poetics.*
Blair and Gerber: *Better Reading*, vol. 2.
Daiches: *Critical Approaches to Literature.*

520 Practical Criticism   Full Course

A. G. Hooper

An obligatory course for second year honours students.

Lectures: 3 hours per week for two terms.

530 Criticism   Full Course.

J. Buell

An obligatory course for third year honours students. A study of the major theories of literature from Aristotle to the present. The course presumes wide reading in literature and some familiarity with the history of philosophy.

Lectures: 3 hours per week for two terms.

Texts: (some) Bates: *Criticism: The Major Texts.*
Frye: *Anatomy of Criticism.*
Lonergan: *Insight.*

610 Canadian Literature.   Half Course.

An elective course for honours students.

Lectures: 3 hours per week for one term.

620 American Literature.   Half Course.

An elective course for honours students.

Lectures: 3 hours per week for one term.

Course leading to an Honours B.A. in English.

First Year: English 105, 106; French; Mathematics 101; Classics 102 or 121 Theology 101; History 101.

Second Year: English 360 and 520; French; Classics 202 or 221 or 222; Philosophy 202; Theology.

Third Year: English 530 and two from 110, 260, 280; Philosophy 303; Theology.

Fourth Year: English 120, 150 and one from 110, 260, 280; Philosophy 404; one Philosophy half-course elective.

To qualify for the Honours English B.A., honours standing must be maintained in the six obligatory English courses, in the two English elective courses and in two of the following: Classics 201, Philosophy 202, Philosophy 303 and the Philosophy half-course elective. In other subjects the required pass standing must be maintained.

Course leading to a General B.A. with the Major in English.

First Year: As in the Honours English.

Second Year: Classics 202 or 221 or 222; English 330; French; Philosophy 202; Theology; one elective.

Third Year: Two general English electives; Philosophy 303; one Science elective; Theology.

Fourth Year: Two general English electives; Philosophy 404; one Philosophy elective; one Social Science elective.

GEOTECHNICAL SCIENCES

D. J. McDougall..................(*Department Chairman*) *Associate Professor*
S. Yalcin...*Assistant Professor*
H. J. Bergmann..*Lecturer*
D. Gold...*Lecturer*

†301 General Geology. Full Course.

D. J. McDougall

Elements of mineralogy, petrology, soil mechanics, structural geology, historical geology and geomorphology. Emphasis is laid on the relationship of geology to engineering practice. Mineral, rock and soil specimens, topographic and geologic, maps, and air photos are studied in the laboratory. During October and November several field trips are made to points of interest in and near Montreal.

Lectures: 2 hours per week for two terms.

Laboratory: 2 hours per week for two terms.

Text: Edward C. Dapples: *Basic Geology for Science and Engineering* (Wiley).

†302 Mineralogy. Full Course.

D. Gold

Crystallography, physical mineralogy, chemical mineralogy and the descriptive, mineralogy of some 150 important rock-forming and economic minerals. Occurence, association and uses of minerals. In the laboratory, crystal forms are studied and minerals are identified by the determination of their physical characteristics and by semi-qualitative chemical tests.

Lectures: 2 hours per week for two terms.

Laboratory: 3 hours per week for two terms.

Text: Berry and Mason: *Mineralogy* (Freeman).

†303 Applied Geophysics. Half Course.

H. J. Bergmann

An introduction to geophysical methods of prospecting and of investigating subsurface structures. The theories, uses and limitations of various magnetic, electrical, gravitational and seismic methods are explained and compared. The practical operation of the instruments is reviewed and actual field results are obtained and analysed.

Prerequisite: Geotechnical Science 301 and Physics 205.

Lectures: 2 hours per week for one term.

Texts: Eve and Keys: *Applied Geophysics*. (Cambridge Univer. Press).
Dobrin: *Introduction to Geophysical Prospecting*. (McGraw-Hill).

†304 Field Geophysics. Half Course.

Field work involving small scale seismic, magnetic, gravimetric and electrical surveys.

Prerequisite: Geotechnical Science 303.

Field Work: 2 weeks in May at McGill Geophysics field school.

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†*Courses marked with a dagger are offered on a regular basis to engineering students. Interested students in other fields may take one or more courses by arrangement with the Department. Courses in which there is insufficient registration will not be given during the current year.*

305   Structural Geology.   Full Course.   D. Gold

A survey of geological structures and their origins. Elements of structural interpretation. In the laboratory, graphical methods are used for the anlaysis and interpretation of practical problems.

Prerequisite: Geotechnical Science 301, 306.

Lectures: 2 hours per week for two terms.

Laboratory: 2 hours per week for two terms.

Text: Billings, *Structural Geology*, 2nd ed. (Prentice-Hall).

306   Geotechnical Methods.   Half Course.   D. J. McDougall

A survey of field and laboratory methods and techniques which is designed as an introduction to the philosophy and practice of geotechnical investigations. Interested students will take this course concurrently with the second half of Geotechnical Science 301.

Lectures: 2 hours per week for second term.

Laboratory: 2 hours per week for second term.

†401   Geomorphology.   Half Course.   D. J. McDougall

An advanced course in the study of landforms produced by the processes of erosion and deposition by water, wind, glaciation and earth movements. The interrelationship of geologic processes, materials, and structures, soil types, climatic conditions, etc., in the development of topographic forms is emphasised. Suites of maps and air photos plus one full day field trip are used to illustrate the lectures.

Prerequisite: Geology 301.

Lectures: 2 hours per week for first term.

Laboratory: 2 hours per week for first term.

Text: Thornbury, *Principles of Geomorphology*. (Wiley).

†402   Engineering Geology.   Half Course.   S. Yalcin

Engineering properties of rocks. Ground water. The formation and mechanics of soils including structure, gradation, sedimentation, permeability, compressibility and shearing strength. Application of soil characteristics to typical geotechnical problems in bearing capacity, settlement and lateral earth pressure. Crustal movements and stability of slopes. Frost action in regolith. Laboratory work for experimental determination of above characteristics.

Prerequisite: Geotechnical Science 301.

Lectures: 2 hours per week for Second Term.

Laboratory: 2 hours per week for Second Term.

Text: Krynine and Judd, *Principles of Engineering Geology and Geotechnics*. (McGraw-Hill).

†403   Field Geology (McGill Geology 231c).   Half Course.

Surface and underground field mapping methods. Preparation of geological maps, sections and reports from field notes, diagrams, air photos, etc.

Prerequisite: Geotechnical Sciences 301, Engineering 201, 303.

Field School: 2 weeks in May at McGill Field Geology School.

Texts: Lahee, *Field Geology*, 5th ed. (McGraw-Hill).
                 Mckinstry, *Mining Geology*. (Prentice-Hall).

404   Optical Crystallography.   Half Course.   D. Gold

The optical properties of non-opaque crystalline substances under the polarizing microscope. In the laboratory, mineral powders are identified by their optical characteristics and by the determination of their refractive indices.

Prerequisite: Geotechnical Sciences 302.

Lectures: 2 hours per week for one term.

Laboratory: 3 hours per week for one term.

Text: Wahlstrom: *Optical Crystallography*. (Wiley).

405   Geology and Mineral Resources of Canada.   Half Course.
                                                             D. J. McDougall

The geology and mineral resources of Canada are described in relationship to the major geomorphic subdivisions. Reading assignments and colloquium are used to provide illustrative material.

Lectures: 2 hours per week for one term.

Colloquium: 1 to 3 hours per week for one term.

Text: *Geology and Economic Minerals of Canada*, 4th ed. (Econ. Geol. Series No. 1, *Geological Survey of Canada*.

406   Petrology.   Full Course.   D. Gold

A systematic survey of the origins, distribution, classification and identification of the common igneous, sedimentary and metamorphic rocks. In the laboratory megascopic and microscopic properties are studied, using field techniques and the polarizing microscope.

Prerequisite: Geotechnical Science 302, 306.

Lectures: 2 hours per week for two terms.

Laboratory: 3 hours per week for two terms.

Text: Tyrrell, *The Principles of Petrology*.
                 Moorhouse, *The Study of Rocks in Thin Section*.

407   Economic Mineral Deposits.   Full Course.   D. J. McDougall

The origins, types of occurence and classification of deposits of important metallic and non-metallic minerals of economic importance.

Prerequisite: Geotechnical Science 302, 305, 406.

Lectures: 2 hours per week for two terms.

Colloquium: 2 hours per week for two terms.

Text: Bateman, *Economic Mineral Deposits*. (Wiley).

408   Geotechnical Laboratory.   Full Course.   Staff

Courses leading to the B.Sc. General with a Major in Geotechnical Sciences.

First Year: Chemistry 101, 102; English 101; Engineering 120; French; Mathematics 106, 107, 108, 109; Physics 101, Theology 101.

Second Year: Chemistry 211, 212; Engineering 260; French; Geotechnical Sciences 301, 302, 306; Mathematics 205, 206; Philosophy 202; Theology.

Third Year: Chemistry 231, English; Engineering 210; Geotechnical Sciences 303, 304 (Field School), 305, 404; Physics 205; Philosophy 303; Theology.

Fourth Year: Engineering 240, 341 (Laboratory only); Geotechnical Sciences 401, 402, 403 (Field School), 405, 406, 407, 408; Philosophy 404.

F. G. W. Adams...*Associate Professor*
Rev. C. B. O'Keefe, S. J.......................................*Associate Professor*
D. C. Savage...*Assistant Professor*
A. M. J. Hyatt..*Assistant Professor*
R. T. Coolidge..*Assistant Professor*
R. E. Ruigh...*Assistant Professor*
J. F. McGovern...*Lecturer*
S. D. Malik...*Lecturer*

GENERAL COURSES

101   The Age of Transition, 1300-1789.   Full Course.   A. M. J. Hyatt,
R. E. Ruigh

A survey of the cultural, intellectual, political and social developments in Europe and the expansion of Europe into Africa, Asia and America.

Three hours per week for two terms.

201   History of Canada.   Full Course.   A. M. J. Hyatt

A general survey from the establishment of New France to the Second World War with special emphasis on 19th century political and constitutional developments.

Three hours per week for two terms, lectures and seminars.

202   History of Modern Europe, 1789-1919.   Full Course. F. G. W. Adams

A survey of the main social, economic, political and intellectual developments in European history from the French Revolution to the Treaty of Versailles.

Three hours per week for two terms.

203   Introduction to the History of Africa.   Full Course.   D. C. Savage

Africa before European colonization; colonial policies of the European powers; the rise of nationalism.

301   History of England.   Full Course.   R. E. Ruigh

A general survey from the Anglo-Saxons to the present day.

Three hours per week for two terms.

302   History of United States.   Full Course.   F. G. W. Adams

A survey of American political, economic and social development from the discoveries to the New Deal.

Three hours per week for two terms.

303   History of the British Commonwealth.   Full Course.

A comparative survey from the 16th century to the present with emphasis on the development of colonial and imperial policy.

Three hours per week for two terms.

304   Modern History of India and Pakistan.   Full Course. S. D. Malik

A survey of the subcontinent from the Mogul Empire through the eras of European expansion, British rule, and the rise of nationalism to the present.

Three hours per week for two terms.

401   History of Medieval Europe.   Full Course.   R. T. Coolidge

A survey of the main events of medieval history and of the institutions and peoples which have helped shape western civilization.

Three hours per week for two terms.

402   The Middle East.   Full Course.   H. P. Habib

A brief historical and political survey of the area with a study of the modern political institutions of the Middle Eastern States. (This course is also Political Science 217).

Three hours per week for two terms.

HONOURS COURSES

311   The Renaissance and Reformation.   Full Course. J. F. McGovern

A study of the culture of the Renaissance, the Protestant revolt and the Catholic reaction through the Thirty Years War.

Three hours per week for two terms, lectures and seminars.

312   The Age of Enlightenment.   Full Course.   F. G. W. Adams

A study of European ideas and institutions from the death of Louis XIV to the coming of the French Revolution with emphasis on France.

Three hours per week for two terms, lectures and seminars.

313   History of Medieval England.   Full Course.   J. F. McGovern

The social, political and economic development of England during the medieval period.

Three hours per week for two terms, lectures and seminars.

314   History of Tudor-Stuart England.   Full Course.   R. E. Ruigh

A study of the rise of the new monarchy and the economic, political and religious developments of the period.

Three hours per week for two terms, lectures and seminars.

315   West Africa in the Colonial Era.   Full Course.

Emphasis will be placed on the French colonies.

Three hours per week for two terms, lectures and seminars.

316   Medieval France.   Full Course.   R. T. Coolidge

The social, political and economic development of Medieval France.

Three hours per week for two terms.

411 Medieval Institutions. Full Course. R. T. Coolidge

Aspects of medieval cultural life with emphasis on the development of learning from the Carolingian Renaissance to the foundations of the universities.

Three hours per week for two terms, lectures and seminars.

412 British Political Parties. 1815-1950. Full Course. D. C. Savage

Emphasis on the structure of politics and the role of political parties in modern industrial England.

Three hours per week for two terms, lectures and seminars.

413 History of South Africa. Full Course. D. C. Savage

A survey of South African history from the 17th century with emphasis on the period of the Boer War and the unification of South Africa.

Three hours per week for two terms.

414 History of Canada. 1867-1919. Full Course. A. M. J. Hyatt.

A close study of some significant aspects of Canadian development with emphasis on political and economic development.

Three hours per week for two terms, lectures and seminars.

415 Eighteenth-Century England. Full Course. R. E. Ruigh

Three hours per week for two terms. (will not be given in 1963-'64)

An honours course is offered in the history of each of four major areas: European, North American, British and Non-European. Candidates for the Honours B.A. in History are required to take three from among the General courses, six from among the Honours courses as listed above. They are strongly urged to take 101 also in Freshman. There will be a comprehensive examination at the end of fourth year.

Candidates for the General B.A. with the major in History are required to take five General courses after Freshman. They are also urged to take History 101 in Freshman.

Courses leading to the Honours B.A. in History.

First Year: English 101; French; Classics 102 or 121; Mathematics 101; Theology 101; one elective.

Second Year: French; Philosophy 202; Theology; three electives from the History courses.

Third Year: Philosophy 303; Philosophy elective; Theology; three electives from the Honours History course.

Fourth Year: Philosophy 404; three electives from the Honours History course.

Program for the General B.A. with the Major in History.

First Year: The same as in the Honours History Program.

Second Year: Classics 202 or 221 or 222; English; French; History 201 or 202 or 203; Philosophy 202; Theology.

Third Year: Two courses from History 301, 302, 303, 304; Philosophy 303; Theology; one elective.

Fourth Year: Two courses from History 401, 402, 403; Philosophy 404; Philosophy elective; one elective.

Rev. E. O'Connor, S.J.......................(*Department Chairman*) *Professor*
I. Benjamin...*Associate Professor*
A. Prillo...*Assistant Professor*
K. N. Majumdar...*Assistant Professor*
D. A. Bonyun...*Lecturer*
L. J. Gill...*Lecturer*
C. Hewson...*Lecturer*
T. Srivastava...*Lecturer*

101   Algebra and Trigonometry.   Full Course.   C. Hewson

(a) Algebra and Graphs. Linear and quadratic functions and their graphs. Ratio and proportion. The progressions. Permutations and combinations. The binomial theorem. Mathematics of investment.

(b) Plane Trigonometry and Analytic Geometry. The trigonometric functions and solution of right-angled triangles. Measurement of angles identical relationships among the functions trigonometric equations. Graphs of the trigonometric functions. Solution of triangles. Logarithms. Discussion of straight line and circle.

Lectures: 3 hours per week for two terms.

106   Analytic Geometry.   Half Course.

An elementary study of the straight line and circle, with an introduction to conic sections.

Lectures: 3 hours per week for one term.

Text: Smith, Salkover and Justice, *Analytic Geometry*.

107   Plane Trigonometry.   Half Course.

The trigonometric functions and solution of right-angled triangles. Measurement of angles, identical relations among the functions and trigonometric equations. Functions of compound angles, transformations of products and sums. Logarithms. Solution of triangles. Graphs of the trigonometric functions, general solutions of trigonometric equations and inverse functions.

Lectures: 3 hours per week for one term.

Text: Hall and Knight, *Elementary Trigonometry*.

108   Intermediate Algebra.   Half Course.

Linear and quadratic functions. Polynomials and algebraic equations. Rational functions, ratio and proportion and systems of equations. Series of numbers; the progressions. Permutations and combinations. Mathematical induction. The binomial theorem and approximations. Mathematics of investment.

Lectures: 3 hours per week for one term.

Text: Rosenbach and Whitman, *College Algebra*. (Ginn).

109   Senior Algebra.   Half Course.

Functions. Inequalities and their solutions. Complex Numbers. Theory of Equations. Logarithms. Determinants. Partial Fractions. Infinite Series.

Lectures: 3 hours per week for one term.

Text: Rosenbach and Whitman, *College Algebra*. (Ginn).

202   Elementary Statistics.   Half Course.

Frequency distributions—Descriptive measures; Probability; Sampling; Estimation of confidence intervals; Testing hypothesis; Tests for randomness; Linear relations; Correlations.

Lectures: 3 hours per week for one term.

Text: Freund, *Modern Elementary Statistics*. (Prentice-Hall).

203   Theory of Interest.   Half Course.

Simple and compound interest; discounts; annuities certain; sinking funds; bonds; elementary interpolation.

Lectures: 3 hours per week for one term.

Text: Simpson, Pirenian and Crenshaw; *Mathematics of Finance*. (Prentice-Hall).

204   Calculus.   Full Course.

An introductory course aiming to cover the ordinary techniques and applications of calculus. It includes the following topics: Functions. Limits. Graphs, Slope. Differentiation and integration of polynominal, algebraic, trigonometric, exponential, and logarithmic functions. Applications. Definite integrals. Partial derivative. Multiple integrals. Tables of integration.

Lectures: 3 hours per week for two terms.

Text: Ross R. Middlemiss, *Differential and Integral Calculus*. (McGraw-Hill).

205   Calculus.   Full Course.

A first course aiming to cover as completely as possible the ordinary techniques and applications of calculus.

(a) Limits of functions, differentiation and integration of polynomials with applications; Second derivative and differentiation of algebraic, exponential and logarithmic functions; Curvature; Definite integral.

(b) Differentiation and integration of trigonometric functions; Methods of integration; Improper integrals; Applications of the definite integrals; Approximate integrals; Partial derivatives; Multiple integrals; Expansion of functions.

Lectures: 3 hours per week for two terms.

Text: Ross R. Middlemiss, *Differential and Integral Calculus* (McGraw-Hill).

206   Analytic Geometry of two and three Dimensions.   Half Course.

This course, which begins with conic sections, embraces the chief topics of plane and space geometry that are of common interest to both the science and the engineering student. It includes the following: The principal properties of the parabola, the ellipse, the hyperbola. Coordinate transformations and polar coordinates. Method of distinguishing type of conic from its unreduced equation. Some "higher" plane curves. Parametric equations. Cartesian spherical and cylindrical coordinates in space. Equations of lines, planes, cylinders, cones, and surfaces of revolution. An introduction to the study of quadric surfaces.

Lectures: 3 hours per week for one term.

Text: Smith, Salkover and Justice, *Analytic Geometry*.

208 Algebra. Full Course.

(a) The first part of this course aims at an accurate working familiarity with the following topics: Real numbers, decimal approximations and abbreviated methods of computation. Inequalities. Complex numbers. Formal and functional properties of polynomials, polynomial equations. Rational functions.

(b) The second part embraces the following topics: Solution of cubic and quartic equations by radicals. Systems of linear equations, determinants, matrices, linear transformations (projecture and complex). Symmetric functions of the roots of an equation. Approximation of irrational numbers by rationals, impossibility of angle trisection by ruler and compass. Sequences, limits, summation of series.

Lectures: 3 hours per week for two terms.

Text: Courant and Robbins, *What is Mathematics?*

214 Algebra and Calculus. Full Course.

A continuation of Mathematics 204.

Topics in Algebra and Calculus. Elementary differential equations.

Lectures: 3 hours per week for two terms.

307 Algebra and Spherical Trigonometry. Half Course.

This course comprises a practical treatment of spherical trigonometry and of the topics of algebra which are necessary for the study of differential equations and are not adequately treated in Maths. 109.

Lectures: 3 hours per week for one term.

Texts: Hart and Hart, *Solid Geometry and Spherical Trigonometry.*
Sokolnikoff, *Higher Mathematics for Engineers and Physicists.*

308 Algebra and Calculus. Half Course.

A continuation of Maths. 205 and 307.

Lectures: 2 hours per week for two terms.

Text: Sokolinikoff, *Higher Mathematics for Engineers and Physicists.*

309 Ordinary Differential Equations. Half Course.

A first course with numerous applications to problems of physics, chemistry, mathematics, and engineering.

Lectures: 2 hours per week for two terms.
Text: Kells, *Elementary Differential Equations.* (McGraw-Hill).

311 Full Course.

(a) Infinite Series and Integrals. A study of the infinite processes used in applied mathematics with a view to securing an effective manipulation.
Lectures: 3 hours per week for one term.

(b) Functions of a Complex Variable. A first course in complex Variable Functions.

Lectures: 3 hours per week for one term.

Text: Knopp, *Theory of Functions.* Part 1.

412 Full Course.

(a) Functions of a Real Variable. A continuation of Math. 311a.

Lectures: 3 hours per week for one term.

Text: Titchmarsh, *The Theory of Functions.*

(b) Functions of a Complex Variable. A continuation of Math. 311b.

Lectures: 3 hours per week for one term.

Texts: Knopp, *Theory of Functions.* Part II.
Titchmarsh, *Theory of Functions.*

*414 Problems of Advanced Calculus. Full Course.

A series of interesting and difficult mathematical assignments intended to integrate the students' knowledge of algebra, analytic geometry and advanced calculus.

Lectures and Laboratory: 2 hours per week for two terms.

415 Modern Algebra. Full Course.

The structure of number systems: Integral domains, ordering, factorization, fields, continuity, algebraic closure. Groups. Vector spaces. Matrices and linear groups. Algebra of classes. Transfinite arithmetic. Algebraic number fields. Galois theory.

Lectures: 3 hours per week for two terms.

Text: Birkhoff and MacLane, *A Survey of Modern Algebra.*

416 Number Theory. Half Course.

An introduction to the problems and methods of "elementary" and analytic number theory.

Lectures: 3 hours per week for one term.

*417 History of Mathematics. Half Course.

Lectures: 1 hour per week for two terms.

418 Numerical Analysis. Half Course.

Lectures: 3 hours per week for one term.

Course leading to the Honours B.Sc. in Mathematics.

First Year: Chemistry 101, 102; English 101; French; Mathematics 106, 109, 205; Physics 101; Theology 101.

Second Year: Chemistry 231 or Physics 220; French; Mathematics 206, 208, 308, 309; Philosophy 202; Theology.

*NB: * beside a course means that the course will not be given in 1963-64.*

Mathematics

Third Year: English; Mathematics 311, 415; Philosophy 303; Physics 204; Theology.

Fourth Year: Mathematics 412, 416, 417, 418; Philosophy 404; Physics 410 or 420.

Course leading to a General B.Sc. with the major in Mathematics.

First Year: Chemistry 101, 102; English 101; French; Mathematics 106, 107, 108, 109; Physics 101; Theology 101.

Second Year: French; Mathematics 205, 206, 208; Philosophy 202; Physics 220; Theology.

Third Year: Chemistry 231; English; Mathematics 308, 309; Philosophy 303; Physics 204; Theology.

Fourth Year: Mathematics 311; Physics 310 or 421; Philosophy 404; one elective.

MODERN LANGUAGES

Rev. A. Nelson, S.J. . . . .*Associate Professor*
H. H. Lau. . . . . *Assistant Professor*
A. S. Michalski. . . . . (*Acting Department Chairman*) *Assistant Professor*
J. J. Couvrette. . . . .*Lecturer*
A. Hamper. . . . .*Lecturer*
J. Mackriss. . . . .*Lecturer*
G. J. Sabourdy. . . . .*Lecturer*
M. Pavitt. . . . .*Lecturer*
D. Yates. . . . .*Lecturer*
Rev. Sr. Maria Anastasia, O.S.B.. . . . .*Lecturer*

FRENCH

100 (108) Full Course.

Essentials of phonetics and grammar. This is a lecture and laboratory course for students who have not yet studied the language.

Three hours per week for two terms.

120 (106) Full Course.

Grammatical review; intermediate composition; phonetics and selected readings from contemporary authors. This is a lecture and laboratory course for students who do not speak the language but who have studied it in High School.

Three hours per week for two terms.

140 (102) Full Course.

Composition; readings from great authors of the 19th and 20th centuries. For students who speak the language fluently and have studied it in High School.

Three hours per week for two terms.

200 (205) Full Course.

Functional grammar and conversation; composition. This is a lecture and laboratory course.

Prerequisite: Course 100.

Three hours per week for two terms.

220 (203) Full Course.

Phonetics; composition and introduction to Literature.

Prerequisite: French 120 or passing grade in the placement examination.

Three hours per week for two terms.

240 Full Course.

Advanced composition; study of great authors of the 17th and 18th centuries.

Prerequisite: French 140 or the placement examination.

Lectures: Three hours per week for two terms.

320 Literature of the 18th century.   Full Course.

Prerequisite: French 240 or permission of the Department.

Lectures: Three hours per week for two terms.

330 Literature of the 19th century.   Full Course.

Prerequisite: French 240 or permission of the Department.

Lectures: Three hours per week for two terms.

340 Literature of French Canada.   Full Course.

Prerequisite: French 240 or permission of the Department.

Lectures: Three hours per week for two terms.

350 The French Novel up to the 20th century.   Full Course.

Prerequisite: French 240 or permission of the Department.

Lectures: Three hours per week for two terms.

420 Literature of the 16th and 17th century.   Full Course.

Prerequisite: French 320, 330, 340 or 350—or permission of the Department.

Lectures: Three hours per week for two terms.

430 Literature of the 20th century.   Full Course.

Prerequisite: Same as for 420.

Lectures: Three hours per week for two terms.

440 French lyrical poetry from the Middle Ages to the present.   Full Course.

Prerequisite: Same as for 420.

Lectures: Three hours per week for two terms.

450 Advanced stylistics and phonetics.   Full Course.

Prerequisite: Same as for 420.

Lectures: Three hours per week for two terms.

460 History of the French language.   Full Course.

Prerequisite: Same as for 420.

Lectures: Three hours per week for two terms.

470 Comparative literature of the 18th century French and English literatures.   Full Course.

Prerequisite: Same as for 420.

Lectures: Three hours per week for two terms.

Note: Not all advanced courses will be offered this year. Interested students should consult the Department before registering.

GERMAN

100 Half Course.

An introductory course for Science students.

Lectures: 2 hours per week for two terms.

SPANISH

100 (111) Functional Spanish.   Full Course.

Essentials of pronunciation and grammar, composition, graded reading of Spanish texts. For students with no previous knowledge of Spanish.

Lectures: 3 hours per week for two terms.

Text: *Modern Spanish*—A Project of the Modern Language Association. (Harcourt-Bruce).

200 (211) Intermediate Spanish.   Full Course.

Grammar review; practice in conversation; composition; selections from the writings of the 19th and 20th centuries introducing the student to the literature and the civilization of Spain and of Spanish America.

Lectures: 3 hours per week for two terms.

320 Full Course.

Contemporary literature. Advanced composition and conversation.

Lectures: 3 hours per week for two terms.

330 Survey of Spanish Literature.   Full Course.

A chronological consideration of Spanish writers from the *Poema de mio Cid* to the post-war period.

Lectures: 3 hours per week for two terms.

340 Literature of the Golden Age.   Full Course.

Lectures: 3 hours per week for two terms.

370   Advanced stylistics and phonetics.   Full Course.

Lectures: 3 hours per week for two terms.

420   Literature of the 19th century.   Full Course.

Lectures: 3 hours per week for two terms.

430   Twentieth-century literature in Spain.   Full Course.

From the Generation of '98 to the present day.

Lectures: 3 hours per week for two terms.

440   Latin American literature.   Full Course.

From the colonization period to the present day, with particular emphasis on Twentieth-Century authors.

Lectures: 3 hours per week for two terms.

450   Cervantes.   Full Course.

Lectures: 3 hours per week for two terms.

460   Old Spanish language and literature.   Full Course.

Readings in medieval texts.

Lectures: 3 hours per week for two terms.

Unless there is a sufficient number of applicants, the advanced courses will not be offered this year. Interested students should consult the Department before registering.

Courses leading to a General B.A., with the Major in French.

First Year: Classics 102 or 121; English 101; French 120 or 140; Mathematics 101; Theology 101; Economics or History.

Second Year: Classics 202 or 221 or 222; English; French 220 or 240; Philosophy 202; Theology; one elective.

Third Year: French: any two of the following: 320, 330, 340, 350, Philosophy 303; Theology; one elective.

Fourth Year: French: any three of the following: 420, 430, 440, 450, 460, 470; Philosophy 404; elective Philosophy.

Courses leading to a General B.A., with the Major in Spanish,

First Year: Classics 102 or 121; English 101; French 100, 120 or 140; Mathematics 101; Spanish 100; Theology 101.

Second Year: Classics 202 or 221 or 222; English; French 200, 220 or 240; Philosophy 202; Spanish 200; Theology; one elective.

Third Year: Philosophy 303; Spanish: any two of the following: 320, 330, 340; Theology; one elective.

Fourth Year: Philosophy 404; elective Philosophy; Spanish: any three of the following: 420, 430, 440, 450, 460.

Students with some knowledge of Spanish prior to their coming to Loyola will have to follow a more advanced sequence.

Latin-American students who come from Spanish language High Schools, if they wish to take a course in Spanish as an elective, or to *Major* in Spanish, will only receive credit if they begin at the 300 level.

Rev. H. P. Phelan, S.J. . . . . *(Department Chairman) Professor*
J. Doyle . . . .*Assistant Professor*
R. Hinners . . . .*Assistant Professor*
A. Kawczak . . . .*Assistant Professor*
E. Roesch . . . .*Assistant Professor*
F. Maguire . . . .*Lecturer*
D. Morgan . . . .*Lecturer*
G. O'Connor . . . .*Sessional Lecturer*
M. Reidy . . . .*Lecturer*

201   An Introduction to Philosophy.   Half Course.   E. J. Roesch

A brief consideration of the method distinctive of philosophy and of some central figures in the history of philosophy. An inductive analysis of the fact of change, its implications and of the basic causes behind the changing being.

Lectures: 1 hour per week for two semesters.

Text: Smith, *The General Science of Nature* (Bruce).

202   Metaphysics.   Full Course.   J. Doyle, R. Hinners, E. Roesch,
G. O'Connor

The basic principles and problems of Metaphysics including: being, change, cause, time, space, origin and nature of matter, existence and nature of God. A general introduction to philosophy precedes the course.

Lectures: 3 hours per week for two semesters.

Text: Smith and Kendzierski, *The Philosophy of Being* (Macmillan)

303   Psychology and Epistemology.   Full Course.   J. Doyle, D. Morgan,
M. Reidy

The philosophical study of man: his unity, origin, nature and destiny; the human soul, intellect, will, habits and sense activities. Problem of Knowledge.

Lectures: 3 hours per week for two semesters.

Text: Royce, *Man and his Nature* (McGraw-Hill)

*304   Symbolic Logic.   Half Course.   A. S. Kawczak

The methods of Symbolic Logic and some applications to the analysis of the structure of axiomatic and empirical sciences.

Lectures: 3 hours per week for one semester.

Text: Copi, *Symbolic Logic* (Macmillan)

*305   Philosophy of Science.   Half Course.   A. S. Kawczak

Lectures: 3 hours per week for one semester.

N.B.   *beside a course means that it will not be given in 1963-64.

306   Development of Logic.   Half Course.   A. S. Kawczak

An examination of the three stages in the development of Logic: Aristotelian, Scholastic and modern Mathematical Logic.

Lectures: 3 hours per week for one semester.

Text: Boehner, *Medieval Logic* (Manchester Univ. Press)

307   Induction and Scientific Method.   Half Course.   A. S. Kawczak

A study of inductive reasoning and scientific methods as applied in different branches of knowledge.

Lectures: 3 hours per week for one semester.

Text: Braithwaite, *Scientific Explanation* (Harper)

404   Ethics.   Full Course.   H. P. Phelan, S.J., F. Maguire

The general principles of morality and a detailed study of individual and social ethics.

Lectures: 3 hours per week for two semesters.

Text: Higgins, *Man as Man* (Bruce)
Leibell, *Readings in Ethics* (Loyola Univ. Press)

405   History of Greek Philosophy.   Half Course.   A. G. O'Connor

A survey of the history of Greek philosophy from the Ionians to the neo-Platonists. Special emphasis will be placed on the thought of Plato and Aristotle.

Lectures: 3 hours per week for one semester.

Text: Copleston, *History of Philosophy*, vol.1, parts 1 and 2 (Double-day)

406   History of Medieval Philosophy.   Half Course.   A. G. O'Connor

The main currents of medieval thought from Augustine to Aquinas. Complementing the history of philosophy, some account will be given of medieval academic and religious institutions.

Lectures: 3 hours per week for one semester.

Text: Coppleston, *History of Philosophy*, vol. 2, parts 1 and 2 (Double-day)

407   History of Modern Philosophy.   Full Course.   A. S. Kawczak

Discussion and critical evaluation of the major modern philosophers and philosophic movements with special emphasis on Descartes, Hobbes, Locke, Hume, Kant and Hegel.

Lectures: 3 hours per week for two semesters.

Text: Copleston, *History of Philosophy*, vol.4,5,6 (Burns and Oates)

408   Contemporary Philosophic Movements.   Full Course. A. S. Kawczak

A study of the more significant trends of thought influencing contemporary society. The course will examine critically the nineteenth century origins and contemporary forms of selected philosophical schools. Special attention will be given to Existentialism, Dialectical Materialism, Pragmatism and Logical Empiricism.

Lectures: 3 hours per week for two semesters.

Text: Bochenski, *Contemporary European Philosophy*, (Univ. of Calif. Press)

*409   Problems and Selected Topics in Modern Philosophy.   Full Course.
E. J. Roesch

A study, with a realistic appraisal, of special problems and subjects in Modern philosophy, with emphasis on the tie between practice and philosophical thought.

Lectures: 3 hours per week for two semesters.

Courses leading to a General B.A. with the Major in Philosophy.

First Year: English 101; French; Mathematics 101 or Natural Science Elective; Classics 102 or 121; History 101; Theology 101.

Second Year: Philosophy 202; Classics 202 or 221 or 222; French; English; Political Science 210; Theology.

Third Year: Philosophy 303, 405, 406, 306, 307; History Elective; Theology.

Fourth Year: 404, 407, 408; Political Science Elective; History Elective.

Rev. H. J. MacPhee, S.J.....................(*Department Chairman*) *Professor*
C. E. Eappen...*Assistant Professor*
R. Barton..*Assistant Professor*
E. A. MacPhee...*Lecturer*
S. Morris...*Lecturer*
L. C. Smith...*Lecturer*

101   General College Physics.   Full Course.   R. Barton, A. MacPhee

An introductory course on the elements of mechanics, sound, heat, electricity and light.

Lectures: 3 hours per week for two terms.

Laboratory: 1 period per week for two terms.

103   Heat and Light.   Full Course.

A treatment, more advanced than Physics 101, that supposes calculus is taken simultaneously.

Lectures: 3 hours a week for two terms.

204   Electricity and Magnetism.   Full Course.

Electrostatic field, capacitance, dielectrics, direct current, thermoelectricity, magnetic fields, electromagnetic induction, alternating current, Maxwell's equations.

Lectures: 2 hours a week for two terms.

Laboratory: 1 period a week for two terms.

205   Electricity and Magnetism.   Full Course.

A treatment similar to Physics 204 but replacing Maxwell's equations by additional work on circuits.

Lectures: 3 hours a week for two terms.

Laboratory: 1 period a week for two terms.

206   Properties of Matter.   Half Course.

Experiments in acceleration due to gravity, moments of inertia, elasticity, gyroscopic motion, surface tension, etc.

Laboratory: 1 period a week for two terms.

207   Mechanics.   Half Course.

Hydrostatics, statics and dynamics of a particle.

Lectures: Three hours a week for one term.

220   Algebra and Vector Theory.   Full Course.   H. MacPhee

Elements of Modern Algebra, Matrix theory and Vector analysis.

Lectures: 2 hours per week for two terms.

Text: Benner, Newhouse et al., *Topics in Modern Algebra*. (Harper).

*302   History of Science.   Half Course.   E. O'Connor

The beginnings of Science in the East; the Egyptian, Greek-Roman, "Dark" Ages, Hindu and Arabian, Medieval, Renaissance and Modern Science. Science and Invention of last three centuries.

Lectures: 1 hour per week for two terms.

Text: Sedgwyck and Tyler, *A Short History of Science*.

*303A   Electricity.   Half Course.

Electrostatic fields, capacitance, dielectrics, direct current circuits. One term of Calculus is prerequisite.

Lectures: 3 hours per week for one term.

Text: Sears, *Electricity and Magnetism*. (Addison-Wesley).

303B   Magnetism.   Half Course.

A continuation of 303A covering magnetic fields, electro-magnetic induction, electrodynamics, a.c. circuits, electronics.

Lectures: 3 hours per week for one term.

Text: Sears, *Electricity and Magnetism*. (Addison-Wesley).

304   Heat.   Half Course.

An introductory course in thermodynamics and kinetic theory. It includes the first and second laws of thermodynamics with ample applications and introduces the Helmholtz and Gibbs functions.

Lectures: 3 hours per week for one term.

Text: Sears, *Introduction to Thermodynamics*. (Addison-Wesley).

305   Thermodynamics and Statistical Mechanics.   Full Course.

Lectures: 3 hours per week for two terms.

306   Introduction to Modern Physics.   Full Course.

Lectures: 3 hours per week for two terms.

Laboratory: 1 period per week for two terms.

*NB: * beside a course means that the course will not be given in 1963-64.*

307   Electronic Circuits.   Full Course.   L. C. Smith

Characteristics of vacuum tubes and semi-conductors, rectifiers, triodes and transistors as circuit elements, basic amplifier principles, feed-back, special circuitry, electronic instruments, tuned circuits.

Lectures: 2 hours per week for two terms.

Laboratory: 1 period a week for two terms.

Text: *Fundamentals of Semi Conductors and Tube Electronics.* H. A. Romanowitz. (Wiley).

310   Introduction to Theoretical Mechanics.   Full Course.

Fundamental principles, statics of a particle and of a rigid body, work and energy, gravitation, principle of virtual work, a particle in a uniform force field, harmonic oscillator, motion of a system of particles, plane motion of a rigid body, central force fields, motion of a particle in an accelerated reference frame, motion under constraints, motion of a rigid body in three dimensions.

Lectures: 3 hours per week for two terms.

Text: Becker, *Introduction to Theoretical Mechanics.* (McGraw-Hill).

320   Operational Mathematics.   Full Course.

Lectures: 3 hours per week for two terms.

401   Optics.   Half Course.

Principles of geometric and of physical optics, interference, diffraction, polarization, dispersion, radiation and spectra, magnets and electro-optics, light scattering.

Lectures: 3 hours per week for one term.

Texts: Morgan, *Optics.* (McGraw-Hill). Wood, *Physical Optics.* (Macmillan).

*403   Electromagnetic Theory.   Full Course.

Analysis of electrostatic and electromagnetic field; non-stationary fields and Maxwell's equations; Waves in source-free space; electromagnetic radiation; basic relativistic electrodynamics.

Lectures: 3 hours per week for two terms.

Text: Panofsky and Phillips, *Classical Electricity and Magnetism* (Addison-Wesley).

*404   Modern Physics.   Full Course.

Lectures: 3 hours per week for two terms.

Laboratory: 1 period per week for two terms.

Text: Leighton, *Principles of Modern Physics.* (McGraw-Hill).

*405   Special Laboratory Projects.   Full Course.

Laboratory: 1 period per week for two terms.

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406   Atomic Physics.   Full Course.

The first half of this course is for Physics Majors and Engineers; the second half is for Physics Majors alone.

Lectures: 3 hours a week for two terms.

*410   Theoretical Mechanics.   Full Course.   H. MacPhee

D'Alembert's principle, variational principles, Lagrange's equations, Hamilton's principles, scattering in central-force field, kinematics of rigid body motion, rigid body equations of motion, special relativity, Hamilton's equations of motion, canonical transformations, Hamilton-Jacobi theory, small oscillations, continuous systems and fields.

Lectures: 3 hours per week for two terms.

Text: Goldstein, *Classical Mechanics.* (Addison-Wesley).

*420   Partial Differential Equations of Mathematical Physics.   Full Course.

Lectures: 3 hours per week for two terms.

421   Mathematics for Physics and Chemistry.   Full Course.

Selected topics from Geometry, Algebra and Differential Equations.

Lectures: 3 hours a week for two terms.

Note: Physics 204, 206, 220, 305, 306, 320, 404, 405, 410 and 420 are for Honours Physics students only.

Subjects required for an Honours B.Sc. in Physics.

First Year: Chemistry 101, 102; English 101; French; Mathematics 106, 109, 205; Physics 101; Theology 101.

Second Year: French; Mathematics 308, 309; Physics 204,206, 220, 310; Theology; Philosophy 202.

Third Year: Philosophy 303; Physics 305, 306, 307, 320, 401; Theology.

Fourth Year: English; Philosophy 404; Physics 403, 404, 405, 410, 420.

To enter the first year of the Honours Physics course one's Junior Matriculation papers must have included Intermediate Algebra and Trigonometry. A Junior Matriculation average of 70% with 75% in Science and Mathematics are also required.

Subjects required for a General B.Sc. in Physics.

First Year: Chemistry 101, 102; English 101; French; Mathematics 205 or 107 and 108, 106, 109; Physics 101; Theology.

Second Year: Chemistry 231 or an elective full course; French; Mathematics 205 or 308, 206; Philosophy 202; Physics 103 or 205, 207; Theology.

Third Year: Chemistry 231 or Physics 304 and 401; Mathematics 308 or 309; Physics 205 or 307; Physics 310 or an elective full course; Philosophy 303; Theology.

Fourth Year: English; Philosophy 404; Physics 307 or 403, 406; Mathematics 309 or Physics 421.

H. Habib..........................(Department Chairman) Assistant Professor
M. Falco...Assistant Professor
R. Coyte...Lecturer
C. Schuetz...Lecturer

201   An Introduction to Political Science.   Full Course.   H. P. Habib

A basic course in the fundamentals and significance of Political Science.

Lectures: 3 hours per week for two terms.

Text: E. Schultz *Essentials of Government.* (Prentice-Hall).

211   Britain and the Commonwealth.   Full Course.   R. Coyte

Government and Politics of the British Commonwealth.

Lectures: 3 hours per week for two terms.

*217   The Middle East.   Full Course.   H. P. Habib

Government and Politics of the Middle East. A historical and political survey.

Lectures: 3 hours per week for two terms.

Texts: G. Kirk, *A Short History of the Middle East.* (Methuen).
          M. Harari, *Government and Politics of the Middle East* (Prentice-Hall).

237   International Law.   Full Course.   H. P. Habib

An introduction to International Law.

Lectures: 3 hours per week for two terms,

Text: O. Svarlien, *Introduction to the Law of Nations.* (McGraw-Hill).

251   Canadian Government.   Full Course.   C. Schuetz

A study of the Canadian Political Institutions.

Prerequisite: Political Science 201 or equivalent.

Lectures: 3 hours per week for two terms.

Text: R. MacG. Dawson, *Government of Canada.*

257   American Government.   Full Course.   M. Falco

A study of the American Political Institutions.

Prerequisite: Political Science 201 or equivalent.

Lectures: 3 hours per week for one term.

Text: J. Burns, J. Peltason, *Government of the People.* (Prentice-Hall).

*This course is not offered in 1963-64.

271   International Relations.   Full Course.   C. Schuetz

An introduction to the study of International Relations.

Lectures: 3 hours per week for two terms.

Text: C. Schleicher, *Introduction to International Relations.* (Prentice-Hall).

311   Comparative Government.   Full Course.   H. P. Habib

Comparative analysis of the principal features of government and politics in the United Kingdom, France, Germany and the U.S.S.R.

Prerequisite: Political Science 201 or equivalent.

Lectures: 3 hours per week for two terms.

Text: Cartez-Herz, *Major Foreign Powers.* (Harcourt, Brace and World).

317   Political Theory.   Full Course.   M. Falco

A history of political thought from Plato to the present.

Prerequisite: Political Science 201 or approval of the Political Science Department.

Lectures: 3 hours per week for two terms.

Text: A. Hacker, *Political Theory.* (Macmillan).

322   Latin America.   Full Course.   M. Falco

Government and Politics of Latin America.

Lectures: 3 hours per week for two terms.

361   The Soviet Union.   Full Course.   R. Coyte

Government and Politics of the Soviet Union. Basic theories of communism, evolution of the Soviet system.

Lectures: 3 hours per week for two terms.

371   Senior Seminar.   Full Course.   C. Schuetz

Workshop in Problems of Political Science. Method of group inquiry used to forward constructive, critical thinking and jointly reached conclusions.

Seminar: 3 hours per week for two terms.
          Tutor will direct work in first term.

Courses leading to a B.A. with a major in Political Science.

First Year: English 101; French, Classics 102 or 121; Mathematics 101 or Science; Theology 101; History 101 or Economics 102.

Second Year: Political Science 201, English, French, Classics 202 or 221 or 222; Philosophy 202, Theology.

Third Year: Political Science 311; two Political Science electives; Philosophy 303; Theology.

Fourth Year: Political Science 317; Senior Seminar; one Political Science elective; Philosophy 404; Philosophy (elective).

A major in Political Science is made up of a minimum of *five* full courses in the subject, and a Senior Seminar, or a maximum of *six* full courses in the subject, and a Senior Seminar. A student majoring in Political Science must include in his program Political Science 201, 311 and 317. A student may substitute an economics; or a history course for a Political Science elective with the approval of the Political Science Department.

SOCIOLOGY

101 General Sociology. Half Course.

Social groups, social processes, culture, social and cultural changes.

Lectures: 3 hours per week for one term.

Texts: Timasheff, Facey, Schlereth, *General Sociology*. (Bruce). Zahn, *Readings in Sociology*. (Newman).

102 Social Problems. Half Course.

Population, Immigration, War, Juvenile Delinquency, Crime, Labor, Unemployment, Sterilization, Divorce, Housing Problem, Health, Mental Deficiency and Mental Diseases, Poverty and Dependency, Aging, Interracial Problems.

Lectures: 3 hours per week for one term.

Texts: Mihanovich, Schuyler, *Current Social Problems*. (Bruce). Blishen, Jones, Neagle, Porter, *Canadian Society*. (Macmillan).

THEOLOGY

Rev. E. O'Brien, S.J ....*(Department Chairman) Professor*
Rev. C. H. Henkey...*Associate Professor*
Rev. L. Stanford, S.J ....*Associate Professor*
C. M. Going...*Assistant Professor*
C. McGrath..*Assistant Professor*
Rev. G. O'Brien, S.J ....*Assistant Professor*
A. C. Dechene, Jr..*Lecturer*
Rev. P. Kerans, S.J ....*Lecturer*
Rev. A. Miklósházy, S.J ....*Lecturer*
Rev. J. J. English, S.J ....*Instructor*
K. Gable...*Instructor*

N.B. Courses in Religious Studies are offered for students who are not Roman Catholics; courses in Theological Studies are limited to Roman Catholics.

RELIGIOUS STUDIES

115 Reason and Religion. Full Course. C. McGrath

An analysis of representative approaches, past and present, to the problems of the authentic nature of religion, of the knowledge of God, of the existence of evil, of personal immortality.

Lectures: 2 hours per week for two terms.

Required Text: Abernethy and Langford, *Philosophy of Religion* (Macmillan).

Complementary: Bergson, *The Two Sources of Morality and Religion* (Anchor), Kierkegaard, *Fear and Trembling* (Anchor).

215 The Bible. Full Course. K. Gable

A general survey of the Judaeo-Christian scriptures with special attention accorded to the *Psalms, Job, Isaiah*, the *Gospel of St. John*, and the *Epistle to the Romans*.

Lectures: 2 hours per week for two terms.

Required Texts: *The Complete Bible* (Chicago), Anderson, *The Living World of the Old Testament* (Longmans), McNeile, *An Introduction to the Study of the New Testament* (Clarendon)

315 Comparative Religion. Full Course. G. O'Brien

An introductory course for third or fourth year students.

Lectures: 2 hours per week for two terms.

Required Texts: Otto, *The Idea of the Holy* (Galaxy), Eliade, *Sacred and Profane* (Torchbook) and *Myths, Dreams and Mysteries* (Harper & Brothers)

Complementary: Eliade, *Patterns in Comparative Religion* (Meridian), Albright, *From the Stone Age to Christianity* (Anchor).

THEOLOGICAL STUDIES

Minimum requirements: 101 AB and one course from Group A and one course from Group B.

101A Introduction to Theology. Half Course.   Staff
The nature and function of Christian theology and the areas to which it traditionally addresses itself.

Lectures: 2 hours per week for one term.

Required Texts: *The Complete Bible* (Chicago), Mersch, *The Theology of the Mystical Body* (Herder).

101B The Theology of Morals. Half Course.   Staff
An analysis of the bases of Christian morality and of their relevance to a complete personalist ethic.

Prerequisite: Theology 101A.

Lectures: 2 hours per week for one term.

Required Texts: *The Complete Bible* (Chicago), Häring, *The Law of Christ*, Vol. I (Mercier).

GROUP A

204 Christ as Revealer of the Trinity. Full Course.   C. M. Going
A study of the doctrines of Incarnation and Trinity with special emphasis upon the manner in which the first illuminates the second.

Lectures: 2 hours per week for two terms.

Required Texts: *The Complete Bible* (Chicago), Stanley, *Gospel of St. Matthew* (Liturgical Press), Brown, *Gospel and Letters of St. John* (Liturgical Press).

Complementary: Tresmontant, *St. Paul and the Mystery of Christ* (Harper) Durwell, *The Resurrection* (Sheed).

206 The Church. Full Course.   A. C. Dechene, Jr.
The ecclesial society as institution and event.

Lectures: 2 hours per week for two terms.

Required Texts: *The Complete Bible* (Chicago), De Bovis, *What is the Church?* (Hawthorn), De Lubac, *Catholicism* (Universe).

Complementary: To be announced.

208 Ecumenism. Full Course.   C. H. Henkey
A dogmatic and empirical study of the meaning of the Mystical Body as a distinct, visible, incarnational reality in the Economy of Salvation, of how the intransigent *No salvation outside the Church* is not contrary to the saving will of God, and of how the Church arrives at a fuller understanding of her mission in the uniting of Christians.

Lectures: 2 hours per week for two terms.

Required Texts: Tavard, *Two Centuries of Ecumenism* (Mentor), Küng, *The Council and Reunion* (Stagbook), Meyendorff, *The Orthodox Church* (Pantheon).

Complementary: Mascall, *The Recovery of Unity* (Longmans).

209 Symbolism. Full Course.   P. Kerans
The sacramental as "the sign of grace" investigated in the light of the Incarnation.

Lectures: 2 hours per week for two terms.

Required Texts: *The Complete Bible* (Chicago), James, *Sacrifice and Sacrament* (Barnes and Noble), Roguet, *Christ Acts Through Sacraments* (Liturgical Press).

305 Grace. Full Course.   E. O'Brien
The doctrine of the Scriptures and of contemporary theology regarding the salvific divine-human encounter.

Lectures: 2 hours per week for two terms.

Required Text: *The Complete Bible* (Chicago).

Complementary: Fransen, *Grace and Modern Man* (Herder and Herder). Mersch, *The Theology of the Mystical Body* (Herder).

306 The Theology of the State. Full Course.   A. C. Dechene, Jr.
The theological principles for Catholic political theory and action: the teaching of Aristotle, St. Augustine, St. Thomas, and the social encyclicals. Topics to be studied: the common good, law, Church and state, Machiavellianism, Marxism, the state in the Economy of Salvation, the speculative and practical orders, culture and morality.

Lectures: 2 hours per week for two terms.

Required Texts: *The Complete Bible* (Chicago), McCoy, *The Structure of Political Thought* (McGraw-Hill).

307 Art and Theology. Half Course.   E. O'Brien
An inquiry into the nature of aesthetic experience as evoked in poetry, drama, the fine arts, etc.

Prerequisite: Theology 332.

Lectures: 2 hours per week for one term.

Required Text: Langer, *Reflections on Art* (Galaxy).

Complementary: Cowley (ed.), *Writers at Work* (Compass), Maritain *Creative Intuition in Art and Poetry* (Meridian), Lynch, *Christ and Apollo* (Mentor).

308 Habits, Virtues and Vices. Full Course.   L. Stanford
Questions 49-89 of the *Summa Theologiae*, I-II. Intellectual and moral virtues, theological virtues, the Gifts, Beatitudes, Fruits of the Holy Ghost. Causes of sin, original sin, debt of punishment.

Prerequisite: Philosophy 202.

Lectures: 2 hours per week for two terms.

Required Texts: *The Complete Bible* (Chicago), Pegis, *Basic Works of St. Thomas Aquinas*, Vol. I (Random).

404   The Divine-Human Encounter.   Full Course.   C. M. Going

"Encounter with God" is a favourite category in contemporary theology. This course will investigate how the meeting-between-persons which it suggests is related to the New Testament presentation of Christ, to the earliest and most recent developments in Trinitarian theology, and to the concrete possibilities for human knowledge of God.

  Lectures: 2 hours per week for two terms.
  Required Texts: *The Complete Bible* (Chicago), Mouroux, *I Believe* (Sheed), Tresmontant, *St. Paul and the Mystery of Christ* (Harper).
  Complementary: Cochrane, *Christianity and Classical Culture* (Galaxy), Buber, *I and Thou* (Scribner).

410   Colloquium.   Half Course.   E. O'Brien

Directed research for advanced students.

  Lectures: 2 hours per week for one term.

GROUP B
SCRIPTURE COURSES

222   The Two Testaments.   Full Course.   J. J. English

A study of the Second Adam theme throughout the Scriptures.

  Lectures: 2 hours per week for two terms.
  Required Texts: *The Complete Bible* (Chicago), Giblet, *The God of Israel, the God of Christians* (Desclée).
  Complementary: Charlier, *The Christian Approach to the Bible* (Newman).

*223   Themes of the Bible.   Full Course.   C. M. Going

The evolution through Old and New Testament revelation of certain theological concepts.

  Lectures: 2 hours per week for two terms.
  Required Texts: *The Complete Bible* (Chicago), Gelin, *Key Concepts of the Old Testament* (Sheed), Guillet, *Themes of the Bible* (Fides).

225   The Johannine Writings.   Full Course.   E. O'Brien

Gospel, Letters, and *Apocalypse* interpreted in the context of first century theology.

  Lectures: 2 hours per week for two terms.
  Required Text: *The Complete Bible* (Chicago).
  Complementary: Brown, *Gospel of Saint John and the Johannine Epistles* (Liturgical Press), Richardson, *Gospel According to John: A Commentary* (Collier).

*226   The Pauline Writings.   Full Course.   E. O'Brien

A historical and theological examination of the New Testament scriptures of St. Paul and the Pauline School.

  Lectures: 2 hours per week for two terms.
  Required Text: *The Complete Bible* (Chicago).
  Complementary: Tresmontant, *St. Paul and the Mystery of Christ* (Harper), Cerfaux, *The Church in the Theology of St. Paul* (Herder and Herder).

NB: * beside a course means that the course will not be given in 1963-64.

HISTORICAL COURSES

332   The Evolution of Theology.   Half Course.   E. O'Brien

Christian theology historically considered in its chief representatives from Irenaeus to the present.

  Lectures: 2 hours per week for one term.
  Required Texts: *The Complete Bible* (Chicago), E. O'Brien (ed.), *Readings in the History of Theology* (Loyola).

333   Ecclesiastical History.   Full Course.   G. O'Brien

A survey of the history of the Church with special reference to the General Councils of the Church, the early heresies, the problems of Church and state, the rise of Protestantism, the challenge of Liberalism, the crisis over Papal Infallibility, the onslaught of Modernism and the immoderate reaction which culminated in Integralism; the pastoral concern of the second quarter of the twentieth century which promoted a revival of biblical studies, interest in the liturgy and a new emphasis in patristic studies.

  Lectures: 2 hours per week for two terms.
  Required Texts: Jaeger, *The Ecumenical Council, the Church and Christendom* (Geoffrey Chapman) Jedin, *Ecumenical Councils of the Catholic Church* (Deus). Suhard, *Growth or Decline* (Fides).
  Complementary: De Lubac, *Catholicism* (Universe), Hales, *The Catholic Church in the Modern World* (Image), Butler, *The Idea of the Church* (Helicon), Hughes, *The Church in Crisis* (Doubleday).

339   The Development of the Liturgy.   Full Course.   A. Miklósházy

The origin and growth of liturgies particularly as related to the Church's kerygmatic purposes.

  Lectures: 2 hours per week for two terms.
  Required Texts: Jungmann, *The Early Liturgy* (Notre Dame), Baumstark, *Comparative Liturgy* (Mowbray).

AUTHOR COURSES

243   St. Augustine.   Full Course.   C. McGrath

A textual study of the chief treatises on the Trinity, grace and free choice, Christ and the Church.

     Lectures: 2 hours per week for two terms.
     Required Texts: Przywara, *An Augustine Synthesis* (Torchbook), Hazelton, *Selected Writings of Saint Augustine* (Meridian).
     Complementary: Portalié, *A Guide to the Thought of St. Augustine* (Regnery).

245   St. Thomas.   Full Course.   L. Stanford

The doctrine of St. Thomas Aquinas on the nature of Theology, the Trinity, Creation, the Fall, the Virtues, the Incarnation, the Church, and the Last Things.

     Lectures: 2 hours per week for two terms.
     Required Text: Gilby, *St. Thomas Aquinas: Theological Texts* (Oxford).

*348   Newman.   Full Course.   G. MacGuigan

The course will begin with the autobiographical writings and move from the Sermons through the controversies to his fully developed theological and philosophical inquiries.

     Lectures: 2 hours per week for two terms.
     Required Texts: *Apologia* (Image), *Grammar of Assent* (Image), *Essay on Development* (Image).

349   Karl Rahner.   Full Course.   C. H. Henkey

A textual introduction to the "most modern and most orthodox" of contemporary theologians and his attempts to incorporate into dogma the achievements of present-day philosophical and psychological insight.

     Lectures: 2 hours per week for two terms.
     Required Texts: *Theological Investigations*, Vol. I (Darton, Longman and Todd), *Inspiration in the Bible* (Herder and Herder), *Free Speech in the Church* (Sheed), *On the Theology of Death* (Herder and Herder).
     Complementary: *The Episcopate and the Primacy* (Herder and Herder), *Nature and Grace* (Stagbook).

Courses leading to the Honours B.A. in Theology.

First Year: English 101; French; Classics 102 or 121; Mathematics 101; History 101; Theology 101AB.

Second Year: French; Philosophy 202; Classics 202 or 221 or 222; three Theology electives.

Third Year: Philosophy 303; one Social Science elective; three Theology electives.

Fourth Year: Philosophy 404; three Theology electives.

Courses leading to a General B.A. with the Major in Theology.

First Year: The same as in the Honours Theology programme.

Second Year: French; Philosophy 202; Classics 202 or 221 or 222; English; two Theology electives.

Third Year: Philosophy 303; one Philosophy elective; one Social Science elective; two Theology electives.

Fourth Year: Philosophy 404; one Philosophy elective; one Social Science elective; two Theology electives.